FEBRUARY 1, 1960
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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

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Depreciation, Theory and Practice, by G. M. Jones

THE "KID" LEARNS MORE ABOUT FILTERS, by C. D. Ehinger

Traffic Expense Comparisons in Feasibility Studies, by D. A. Perigo

Let our "Revenue Men" show you

THE MEANING OF DIRECTORY COOPERATION!

Take a man like
Bill Chew...

Bill is one of our "Revenue Men" in Johnstown, N. Y.

A member of the Golden Directory Club for sales achievement, he is representative of the "Revenue Men" who help telephone companies increase their revenue from directory sales.

Bill started work with the General Telephone Directory Company as a sales representative in Herrin, Ill., in 1953. In 1957 he was promoted to sales supervisor and transferred to his current post in Johnstown, N. Y.

He and his wife and their three daughters and one son now live there, where Bill, a semipro baseball player for ten years, manages a home-town boys' baseball team. He is also on the Board of Deacons of his church, as well as being a Sunday School teacher.

Bill Chew is another example of the "Revenue Men" who work for the General Telephone Directory Company—who work for you, and who are an asset to any community in which they live.

You get more than extra sales when you put one of our "Revenue Men" to work on your directory.

His manners, his methods will be a positive credit to your company. He'll be welcomed by your advertisers.

He'll work together with you to produce a book you can be proud of. A directory with complete Yellow Pages service—showing the public where to go for all kinds of purchases, rentals and services. A directory with maximum accuracy, maximum revenue.

And you won't have a worry in the world. Selling, publishing and printing are all done to perfection as part of our Complete Directory Service Plan.

Want to know more about it? A phone call or letter to our nearest office will bring a representative on the double.

GENERAL TELEPHONE DIRECTORY COMPANY

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Des Plaines, Ill.
VAnderbilt 4-2164

Find It Fast
In The
Yellow Pages
GENERAL SYSTEM

DIVISION OFFICES: Bloomington, Ill.
Columbia, Mo. • Durham, N. C. • Erie, Pa. • Fort Wayne, Ind.
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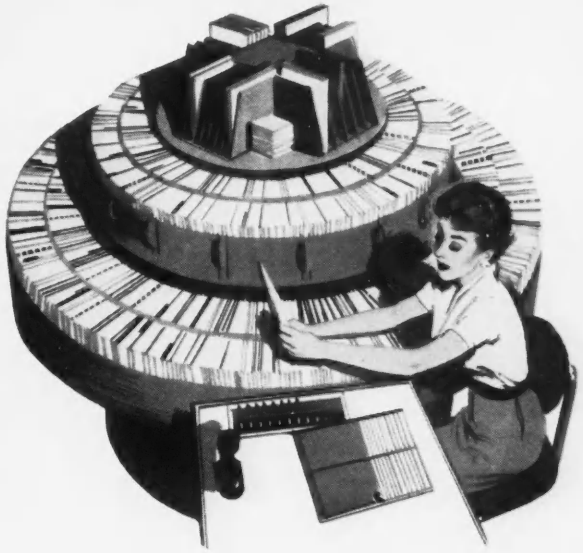
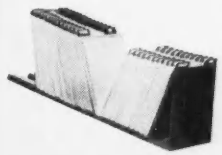
50% MORE OUTPUT WHEN SHE STAYS PUT



NEW ACME VISIBLE ROTARY brings line or trouble card data to users with pushbutton speed!

Without moving from their desks around a smartly modern Acme Visible Rotary, 1, 6, 12 or more users have instant access to as many as 250,000 records. No more waste steps between desks and files. No more reaching or stretching. Per hour output goes up, fatigue errors go sharply down. Send coupon for details on power and manual Rotaries, designed to telephone specifications by Acme Visible engineers working closely with telephone operations experts.



V-ANGLE LINE CARD TRAY. Usable from either end. Flips open at any card, and stays open with supported V-Angle, leaving both hands free. Measured space control keeps space ready for refiling when card is removed or changed.

ADJUSTABLE PARTITIONS IN LINE CARD TUBS are moveable. In event size of your line records is changed in the future, partitioning is easily shifted to fit your new requirements.

ACME VISIBLE

World's Largest Exclusive Makers of Visible Record Systems

ACME VISIBLE RECORDS, Inc. 4102 West Allview Dr., Crozet, Va.

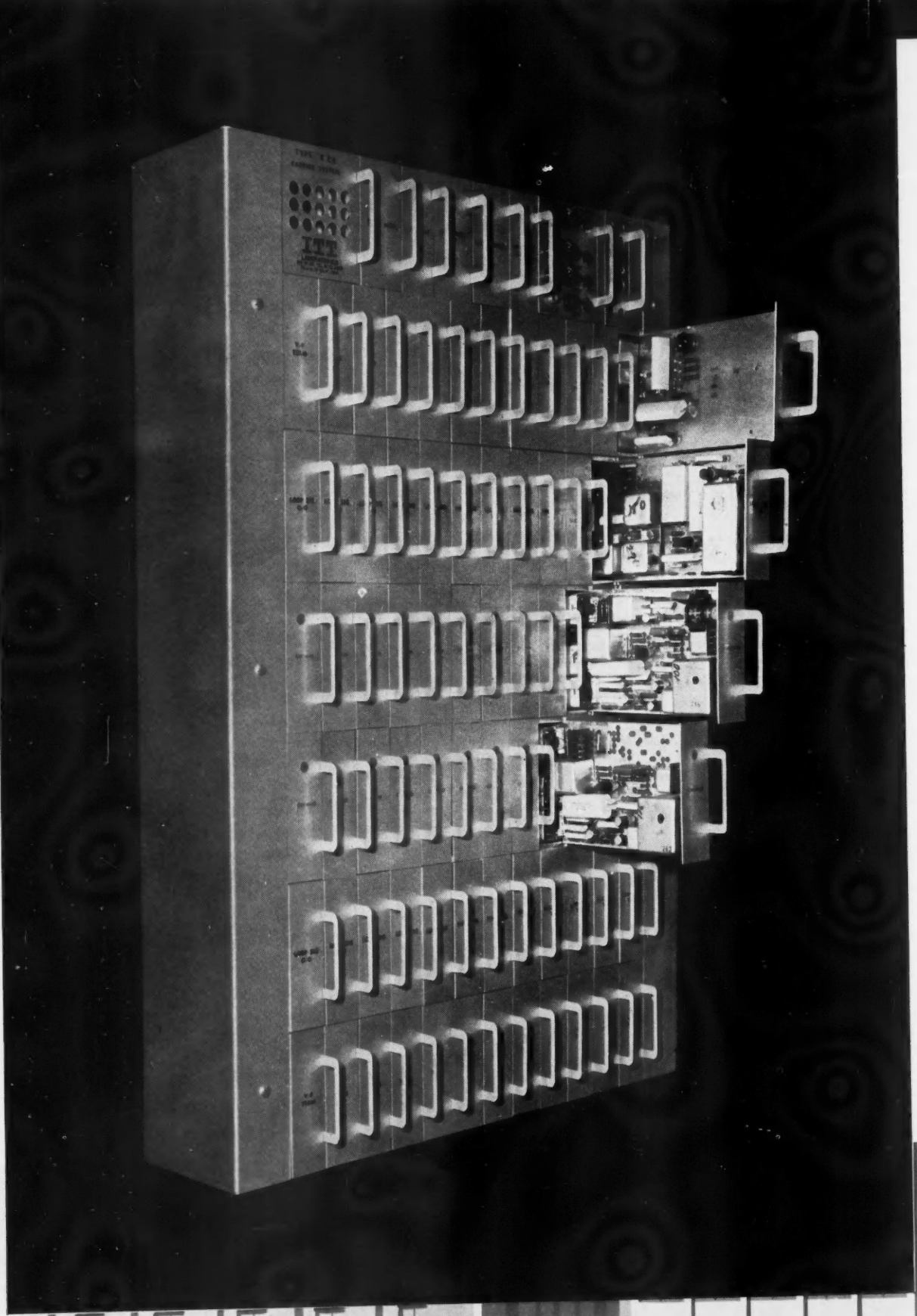
Without cost or obligation, please send more information about your new equipment and systems for handling phone records. And let me have the address of the nearest representative in your nationwide sales and service organization.

We have_____ line cards and_____ cable and terminal records to handle.

Name_____ Title_____

Company_____

Address_____ City_____ Zone_____ State_____


ITT

Meets toll standards at low cost!

Kellogg's NEW K-24 SHORT HAUL cable carrier

Kellogg's new K-24 short haul cable carrier meets toll standards at low cost through using transistors and printed wiring. Availability of regulating repeaters assure uniform transmission. Frequency staggering and novel circuits result in low noise and good performance.

Here are some reasons why the K-24 belongs in your modernization and growth programs:

- ☑ The K-24 has been specifically designed for economical application between 5 and 20 miles.
- ☑ Test installations throughout the country under service conditions prove the efficiency, high quality and economy of K-24 systems.
- ☑ The K-24 can increase the capacity of existing cable manyfold, deferring substantial investment for new cable, conduit or pole lines to care for trunk circuit growth.

Kellogg's K-24 incorporates the most modern principles of electronic design. It is *completely transistorized*, assuring a long trouble-free life. Units are of plug-in, modular construction for ease of replacement, expansion, or modification of the initial installation.

The K-24 is miniaturized and compact: it takes up 31½" on a 19" rack; 96 channels may be mounted in a single 11-foot bay.

A wide range of signalling options for most exchange applications, including that used between panel and crossbar offices, can be provided with the K-24.

For complete technical details on this latest achievement of Kellogg-ITT research, write Kellogg's Carrier Division at 2912 Wake Forest Road, Raleigh, North Carolina.

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois.
Communications Division of International Telephone and Telegraph Corporation.

Regional Offices and Warehouses:
CALIFORNIA: 23 Broderick Road, Burlingame, Calif., OXford 7-6780.
GEORGIA: 1594 Southland Circle, N. W., Atlanta 18, Ga., SYcamore 4-2441.
ILLINOIS: 4900 So. Tripp Ave., Chicago 32, Illinois, CLiffside 4-4300.
KANSAS: 7th & Sunshine Road, Kansas City 15, Kansas, MAyfair 1-4418.
NEW YORK: 327 North West Street, Syracuse, N. Y., HArrison 2-9251.
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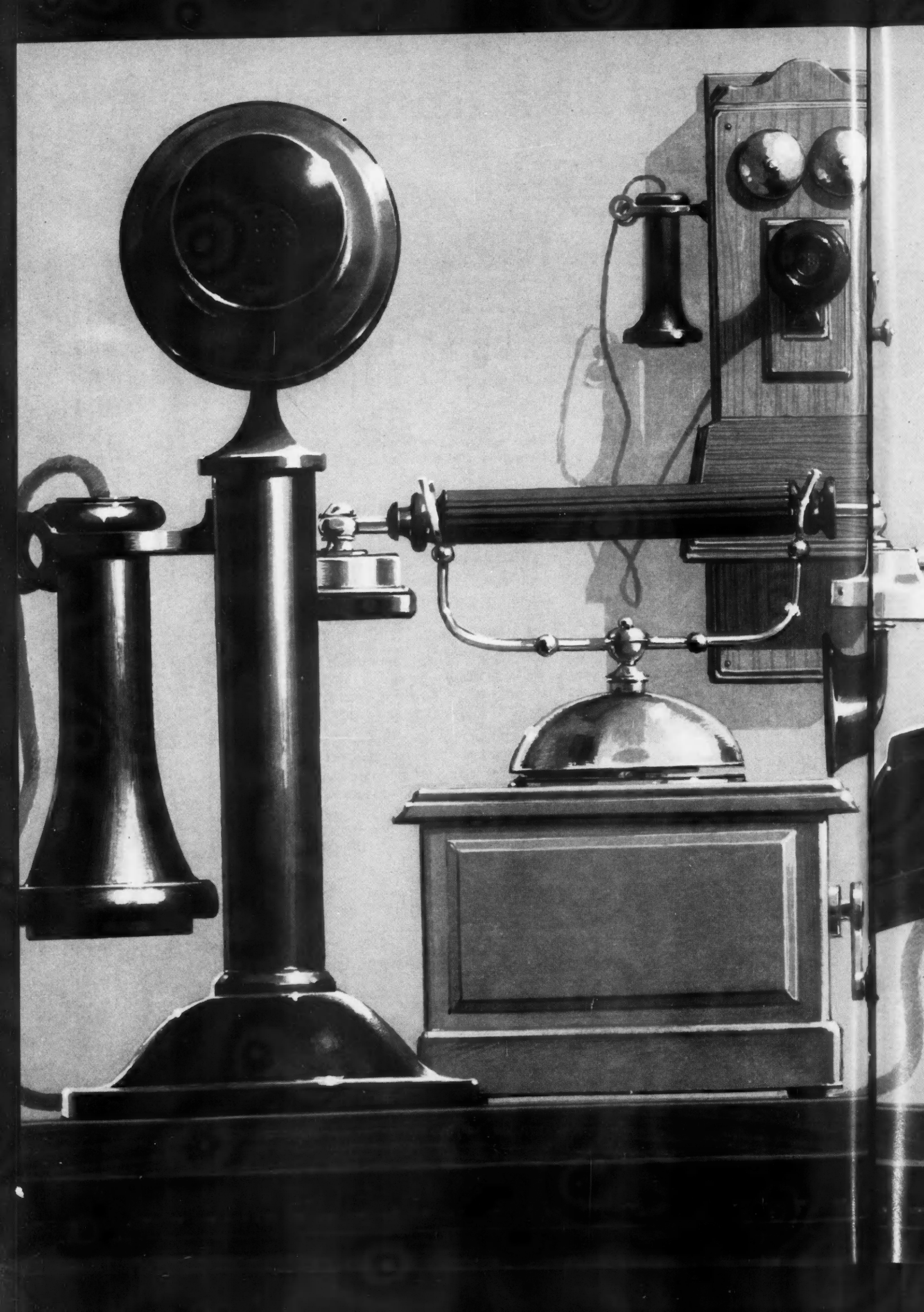

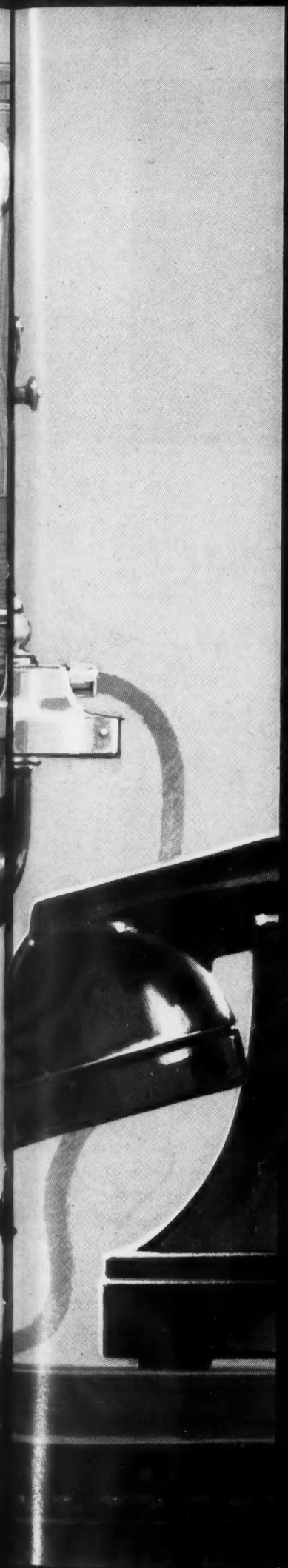

Are you operating a telephone company or an antique shop?

Remember the "old" telephones? Where do you see them today? In antique shops! They are collectors items—museum pieces—nostalgia nudgers!

And what about the telephones you're buying today? If you're buying Ericofons, you're getting the only modern telephone on the market. If you're still buying old-fashioned two-piece phones, you're buying "built-in obsolescence"—it's only a matter of time now before these phones, too, become "antiques," museum pieces. The Ericofon will still be modern long after "today's" phones are only memories!

Next time you buy telephones, stop and think—think hard—do you want to buy instruments that are **already becoming obsolete?**

When you order telephones, order Ericofons—the only modern instruments in the world today—and available only from

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

Galion, Ohio

NORTH

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The TE&M Front Cover

MRS. R. L. MEHAFFEY, SR., wife of the Plant City, Fla., manager of General Telephone Co. of Florida, pins his 55-year service pin on her husband. Mehaffey received the emblem at a banquet for 312 veteran Florida General employes held in Tampa on January 12. He holds the longest service record ever attained by an employe of General Telephone Company of Florida.

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more QUALITY than meets the eye...

Colors of insulation on conductors in

SUPERIOR Telephone CABLES

are electrically balanced

High molecular weight polyethylene insulation is factory-compounded to guarantee uniform electrical characteristics between each color in the code.

Electrical balance between all color-coded conductors . . . proof that you get more quality than meets the eye when you buy SUPERIOR CABLES!

For complete information, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION, HICKORY, NORTH CAROLINA

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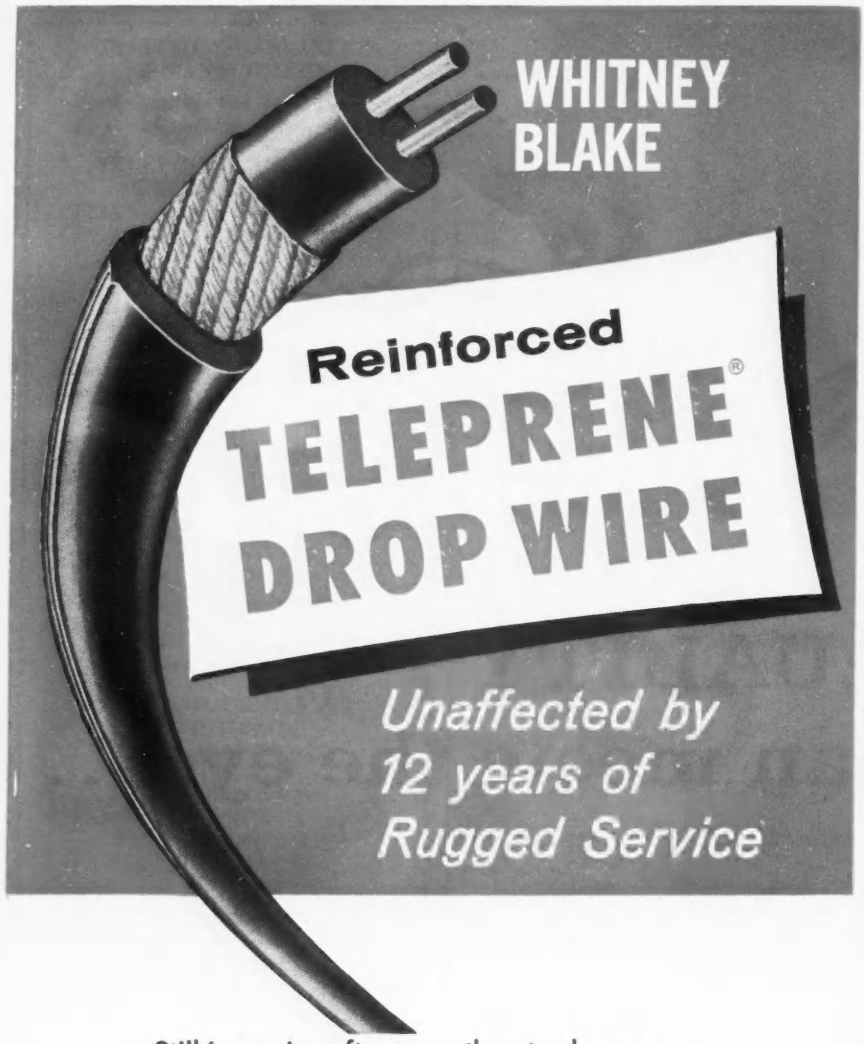


Still in service after more than twelve years . . . that's the exceptional record of WB Reinforced TELEPRENE Drop Wire . . . and there's only one reason . . . quality. By cutting drop wire replacement to the bone with Reinforced TELEPRENE, Whitney Blake has proved that even if you could get drop wire for nothing, unless it stands up as long as WB TELEPRENE, service calls and replacements would cost you more.

INDEPENDENT

WB

This wire is REA approved

1-8

WELL BUILT WIRES SINCE 1899

WHITNEY BLAKE COMPANY

coming

CONVENTIONS

MINNESOTA Tel. Assoc., St. Paul Hotel, St. Paul, Minnesota, Feb. 7-10.

LOUISIANA Tel. Assoc., Jung Hotel, New Orleans, La., Feb. 24-25.

KENTUCKY Tel. Assoc., Phoenix Hotel, Lexington, Ky., March 1.

TEXAS Tel. Assoc., Baker Hotel, Dallas, Texas, March 7-8.

OHIO Tel. Assoc., Deshler Hilton Hotel, Columbus, Ohio, March 28-30.

IOWA Tel. Assoc., Ft. Des Moines Hotel, Des Moines, Iowa, April 5-6.

NEBRASKA Tel. Assoc., Hotel Not Announced. Omaha, Nebraska, April 19-20.

INDIANA Tel. Assoc., Claypool Hotel, Indianapolis, Indiana, May 4-5.

WISCONSIN Tel. Assoc., Plankinton House, Milwaukee, Wisc., May 10-11.

ILLINOIS Tel. Assoc., Abraham Lincoln Hotel, Springfield, Ill., May 19-20.

KANSAS-MISSOURI, Tel. Associations, Town House, Kansas City, Kans., May 23-24.

PENNSYLVANIA Tel. Assoc., Bedford Springs Hotel, Bedford Springs, Pa., June 6-7.

CALIFORNIA Tel. Assoc., Fairmont Hotel, San Francisco, Calif., June 8-10.

WASHINGTON-OREGON Tel. Associations, Sheraton Portland Hotel, Portland, Ore., June 16-17.

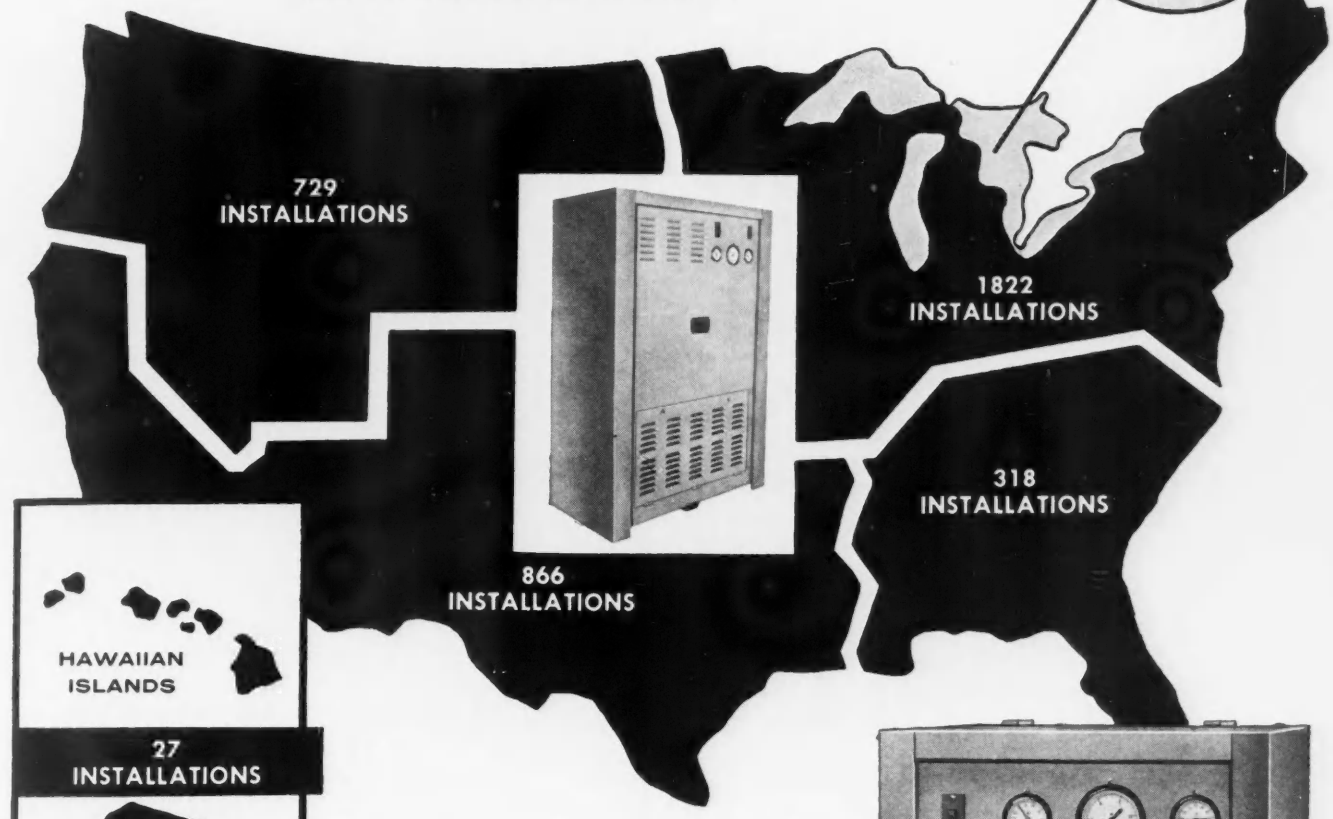
NEW YORK Tel. Assoc., Scaroon Manor, Schroon Lake, N. Y., June 20-22.

MICHIGAN Tel. Assoc., Grand Hotel, Mackinac Island, Mich., Sept. 12-13.

NATIONAL CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 9-12.

...over 4000 PUREGAS INSTALLATIONS now protect TELEPHONE CABLES from MOISTURE!

264 INSTALLATIONS
WORLDWIDE
IN FOREIGN COUNTRIES

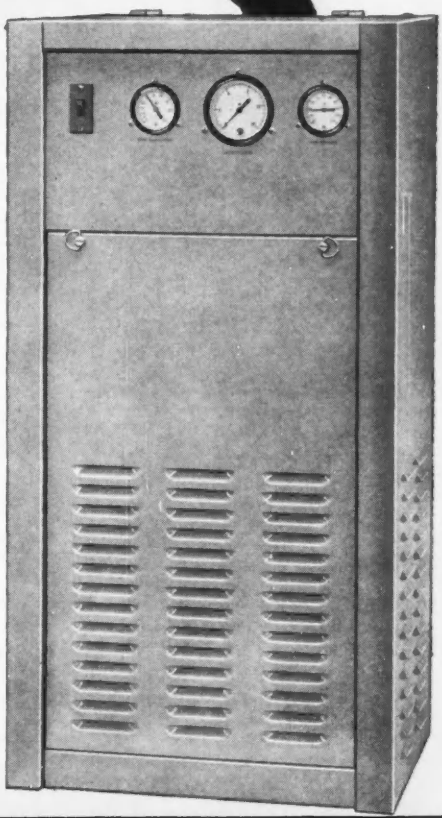


The PUREGAS method (refrigeration) of delivering dry air to cables under pressure is proving very successful and whenever PUREGAS Equipment is installed, maintenance costs are reduced and subscriber service increased.

Thousands of telephone subscribers throughout the world now receive better service because of cable pressurization and the savings that accrue to telephone companies, by eliminating cable moisture, make a PUREGAS system quickly self-liquidating.

This equipment is easy to install, economical to operate and the PUREGAS line now includes three Models, the No. 750, No. 1500 and No. 5000, to accommodate any size operation.

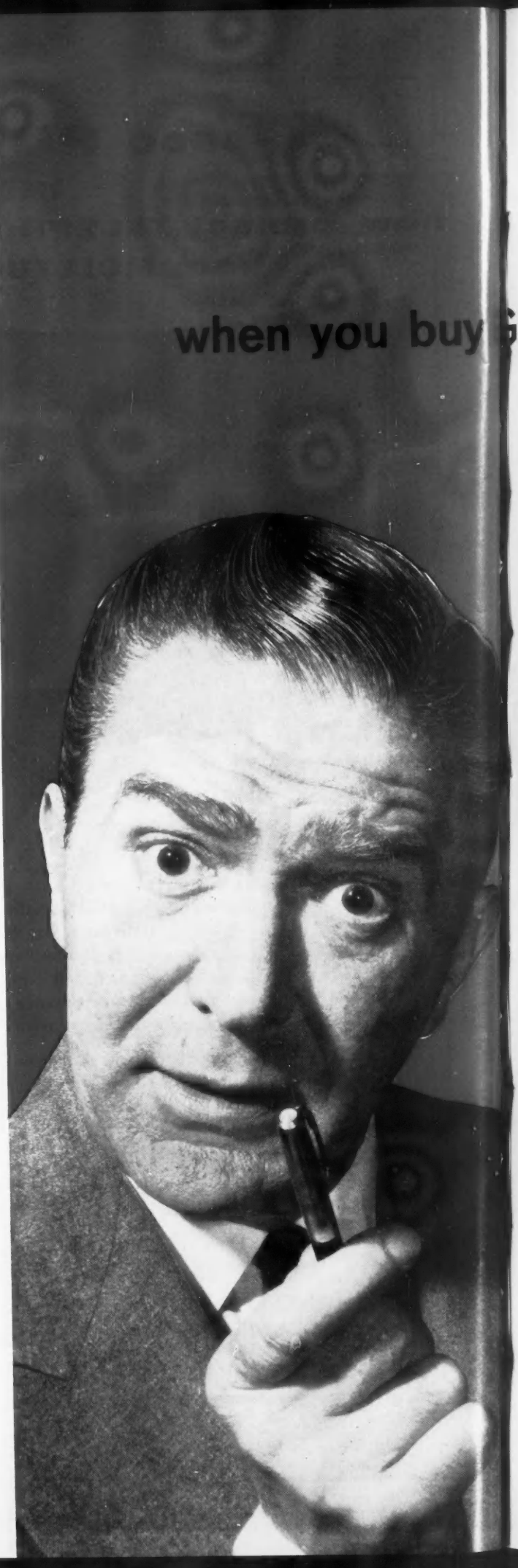
PUREGAS is worldwide and their experience is proving invaluable to those who ask about it. —Why don't you?



Send for Bulletin 110 on Pressurizing and ask for specification sheets on any or all models.

PUREGAS EQUIPMENT CORP.
578 OAK STREET
COPIAGUE, L. I., N. Y.

you
get
all
these
important
extras...



GENERAL CABLE from AE...

1 **More guaranteed pairs** on paper insulated cable. In 19 and 22 gauge cable, *all* pairs are guaranteed. General Cable has also increased guaranteed pairs in 24 and 26 gauge cable.

2 **Lower measured capacitances.** General Cable offers the same low unbalance limits for all standard sizes of paper insulated cable.

3 **Uniform sheath thickness.** Advanced manufacturing techniques insure uniform sheath thickness on all plastic cables.

4 **Guaranteed insulation resistance.** All gauges of paper insulated cable have a guaranteed insulation resistance of 1,000 megohm miles.

5 **Broadest product line in the industry.** General makes a cable for every communications need. Paper-Lead, Jute Protected, Steel-Tape Armored, Stalpeth, Rural Distribution Wires, Aluminum Sheath, Alpeth, Textile Insulated, Switchboard, Interior Wiring and Video Pair are all standard cables.

6 **Faster Delivery.** Some General Cable products are available from stock. Others are available in minimum time. Your AE representative will do his best to get the cable you want—when you need it.

warehouses:

Northlake, Illinois	2915 Moore St. Richmond 21, Va.	2360 N. W. Quimby St. Portland 10, Ore.	158 Corliss Avenue Johnson City, N. Y.	2021 Main St. Kansas City 8, Mo.
Fillmore 5-7111	ELgin 8-9280	CApital 3-7244	SWarthmore 7-8507	HArrison 1-7575

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

Revenue immediately increased 51 per cent at this booth in Platea, Pa., when General Telephone replaced the old style unit with an Alcoa outdoor installation, proving that customers definitely prefer aluminum's brighter, cleaner appearance.

"REVENUE OFTEN INCREASES 50% OR MORE WHEN WE SWITCH TO ALCOA BOOTHS,"

Reports T. J. Schultz, General Commercial Manager, General Telephone Company of Pennsylvania

"Since 1955 we have purchased 177 Alcoa outdoor booths and every one of them has more than paid its way in increased revenue, lower maintenance expense and reduced vandalism damage," says Mr. Schultz.

"An example of the way booths of Alcoa Aluminum boost revenue is this installation in Platea, Pa. Ever since we switched from an old style booth to an aluminum unit and moved the installation a few feet closer to the highway, revenue has shown an average increase of 51 per cent a month.

"Upkeep costs have also gone down since we started installing aluminum booths. Because they are corrosion resistant, occasional washing and sweeping is all that is needed to keep them clean and attractive. And vandalism, too, has been greatly reduced . . . thanks to the excellent lighting and sturdy construction of Alcoa booths."

Like many other companies, General Telephone of Pennsylvania has found Alcoa outdoor booths a sound investment and a sure road to an immediate increase in revenue. Why not find out how Alcoa booths can do the same for you? Write for free brochure and ask your jobber to show you the Alcoa Goodwill Kit—the free promotional package to help you merchandise the new booth to your customers. Aluminum Company of America, 1721-B Alcoa Building, Pittsburgh 19, Pa.

Maintenance costs went down for General Telephone of Pennsylvania when it began using outdoor booths of Alcoa® Aluminum. Occasional sweeping and washing with soap and water is all that is needed to keep them smart and new looking.

"People like the lighting in Alcoa booths," says Mr. Schultz. "Excellent lighting and sturdy construction give a feeling of safety at night!"

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre" alternate Mondays, NBC-TV

TELEPHONE
TELEPHONE

"THERE IS NOTHING FINER THAN A STROMBERG-CARLSON"

Costs go down

as Stromberg-Carlson repeaters go up

On trunks and long lines, 100% transistorized "541" negative impedance repeaters assure maximum transmission quality . . . at low cost.

On existing installations you can often meet DDD requirements without replacing cable. In new installations you can get extra savings by using smaller gauge cable or wire.

On circuits with high transmission loss, Stromberg-Carlson's "551" hybrid-type repeaters can provide the gain you need to achieve toll standards. Initial cost is low; centralized maintenance means additional economy in man-hours saved.

For *in-use* proof of savings in actual *db* per dollar, contact the Stromberg-Carlson representative in your area now.

In Atlanta call TRinity 5-7467; in Chicago STate 2-4235; in Kansas City HArrison 1-6618; in Rochester HUbbard 2-2200; in San Francisco OXford 7-3630.

STROMBERG-CARLSON
A DIVISION OF **GENERAL DYNAMICS**

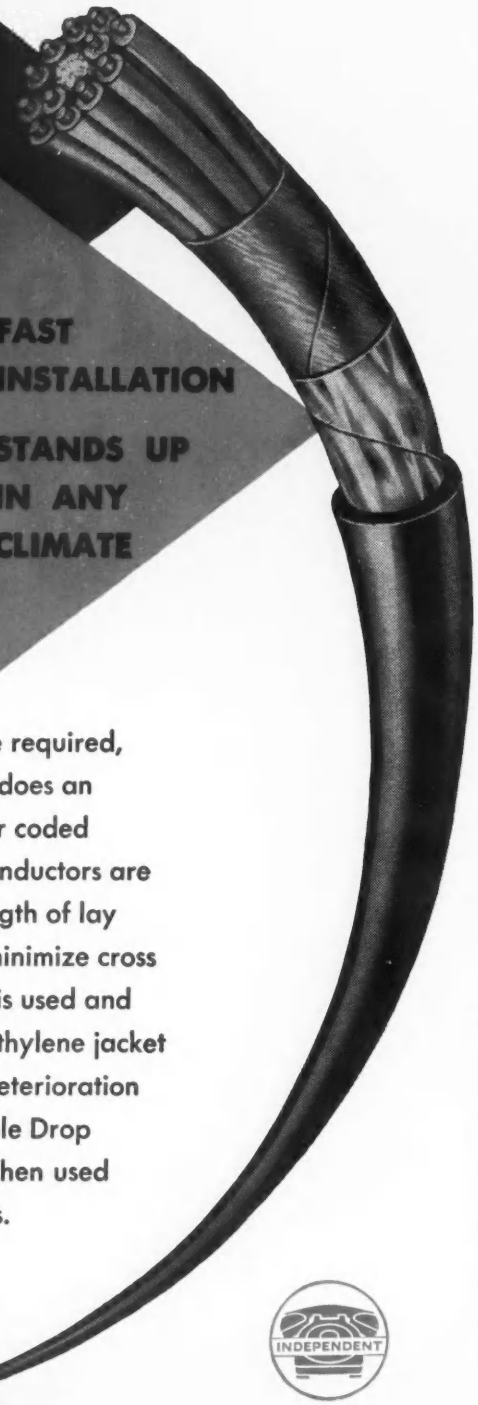
WHITNEY BLAKE

SELF SUPPORTING

Multiple Drop Cable

FAST INSTALLATION

STANDS UP IN ANY CLIMATE



Where multiple drops are required, WB Multiple Drop Cable does an outstanding job. The color coded polyethylene insulated conductors are twisted into pairs with length of lay systematically varied to minimize cross talk. An aluminum shield is used and a special WB black polyethylene jacket protects the whole from deterioration in any climate. WB Multiple Drop Cable is self supporting when used with spiral type deadends.

INDEPENDENT

WB

6-8

WELL BUILT WIRES SINCE 1899

WHITNEY BLAKE COMPANY

NEW HAVEN 14, CONNECTICUT

INDUST

Censorship vs. America

THE INTERNAL Revenue Service has tentatively ruled that money spent by a utility for advertising that opposes governmental competition is to be regarded as "lobbying," and therefore is not deductible as a business expense in Federal income tax returns.

Apparently this happy idea will spread into the field of utility regulation. An official of the Oregon regulatory commission, in a hearing on the Pacific Power & Light Company's application for rate increases, has testified to the effect that more than half of the company's advertisements, protesting against tax-free public ownership of utilities, are regarded as "political." They are not to be allowed as legitimate expense to be charged to the ratepayers.

Before long, this may be a vital issue in our industry. The advocates of public ownership of telephones are not asleep. They are merely biding their time; and when that time comes, we may expect that any telephone company that attempts to defend its own existence will be similarly penalized.

It is all a part of the philosophy that David Lawrence denounced in a recent editorial (*U. S. News & World Report*, 11-30-59) as "the totalitarian mind . . . seeking to impose state control over our thoughts and acts." It ties in with the Post Office refusal to permit a Goya painting of a nude woman to be sent through the mails. It fits into the same dangerous pattern as the recent order (subsequently cancelled), issued by some misguided zealot in the U S. Customs, to burn an imported copy of Petronius Arbiter's *Satyricon*, a book that is on the shelf of every well-stocked public library in the country.

Government officials who exercise this sort of censorship probably have the support of what they choose to interpret as legal backing for their

TRY OBSERVATIONS By L. A. GRITTEN

actions. If so, the fault lies with the legislation. If there is to be any real meaning to the guaranties of liberty contained in the U S. Constitution, Congress and the state legislatures should purge our laws of anything that can be used by a federal or state official in opposition to the true spirit and meaning of that charter.

As a preliminary exercise, every legislator should read, or re-read, George Orwell's "1984". The graveyard of liberty that Orwell describes so vividly is merely a logical extension of this sort of censorship. "Big Brother" is breathing down our necks!

* * *

Good Taste vs. Shoddy

THE AMERICAN television industry, says Rabbi Maurice Eisendrath, head of the Union of American Hebrew Congregations, "has exalted the shoddy and beamed its message to morons."

Amen! However there are many exceptions to the Rabbi's factual generality. We have in mind one TV program that is consistently enjoyable and in good taste; and its commercials are neither unbearably long nor too silly. One turns to it eagerly, as a happy contrast to the stupid vulgarity of most television shows. It is the *Bell Telephone Hour*.

* * *

How Big Is Important?

WE WERE raving about the Grand Coulee in Washington, the biggest thing ever built by man, with its 11 million cubic yards of concrete and its enormous pumps and dynamos. "Mighty" and "Colossal" hardly gave us a good start; we ran out of adjectives. Then an engineer friend coldly reminded us that size means little in an assay of importance. The Grand Coulee dam, he told us, will be outmoded by small atomic energy plants within a decade; and the little microdiodes — you can put more than 1000 of them in a thimble — are vastly more important to us

L. A. GRITTEN'S "Industry Observations" appear exclusively in "Telephone Engineer & Management."

than all the hydroelectric dams put together.

What then is truly of the greatest importance? Ask the eight-nation Committee on Contamination by Extraterritorial Exploration. They may tell you that some tiny virus, not visible under our microscopes, whose existence is merely a supposition, may mean more to us than everything that man has learned or done since we first began to walk erect. The first men to land on another planet may wipe out any life existing there, with germs they take from here. More important to us, they may wipe out all human life with the microorganisms they bring back with them.

* * *

Are The Gals Slipping?

OUR REMARKS about the numerical superiority of the dominant sex in our industry aroused one hopeful male. He informed us that while telephone women outnumber telephone men two to one and their number is increasing, yet the number of men in the business is increasing still faster.

That is true, but the day when the downtrodden male will catch up is still far in the future. The graphs of male and female employment since 1946, when projected, indicate that the sexes in Class A telephone companies should be numerically equal (about 50,000 of each) by about 1976. Unfortunately, women seldom conform to anything so logical as a graph projection. Long before 1976 they will contrive to reverse the trend and keep us under their thumbs.

* * *

Governmental Competition

VERY SOON, you and a few other Americans will stare gloomily at Form 1040 and try to figure out how much you must contribute to the high cost of too much government. Add this to your resentments:

There are more than 700 U. S. Federal government corporate activities. Many of them are in direct competition with private enterprises. They are not authorized by the U. S. Constitution. They pay neither taxes nor rent. They employ over one million people. They operate at a huge loss, estimated for the year 1959 at $19 billion. Every one of them could be run by private enterprise; and there is no excuse for them in a country whose government purports to be opposed to socialism.

Of course, not all of your tax money will go to finance this sort of state socialism at home. Some of it will be used for such hilarious wastage as this:

In Pakistan, 529 refrigerators, 666 room air conditioners, and 650 stoves were purchased for the use of 475 Americans in our foreign aid mission. It is little wonder that President Eisenhower was welcomed with open arms.

* * *

We Settle For A Little

WE NOTICED a short span of wire, pulled very tight. "That's too tight," we commented. "No sag at all."

"Don't display your ignorance," said our engineer pal. "If there were no sag, the tensile strain would be infinite — and they haven't yet made wire to take that much."

You can't argue with technological omniscience, so we settled for a little sag, but not much. — *Leslie A. Gritten.*

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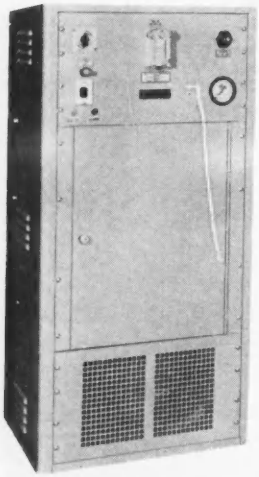
THE MODEL "RC" DEHYDRATOR AUTOMATIC IN OPERATION



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The Model "RC" Dehydrator is designed to supply dry air to aerial and underground telephone cables. It is especially suited for small installations of 80 miles or less of cable. Wall or relay rack-mounted, the Model "RC" is approximately 24" high, 28" wide and 8" deep. Operating voltage is 115 volts, 1 phase, 60 cycle, and the output is 700 standard cubic feet per day maximum, with a dewpoint of —65°F. Other outstanding features are:

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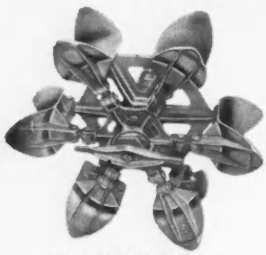

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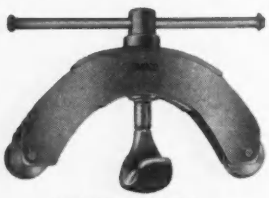

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Ralph F. Lucier Dies Following Heart Attack

RALPH F. LUCIER, 66, vice president-telephone operations, for United Utilities, Inc., Kansas City, Mo.; president of United Telephone Co. of Indiana, Inc. and Ohio Telephone Service Co., died at St. Joseph's Hospital,

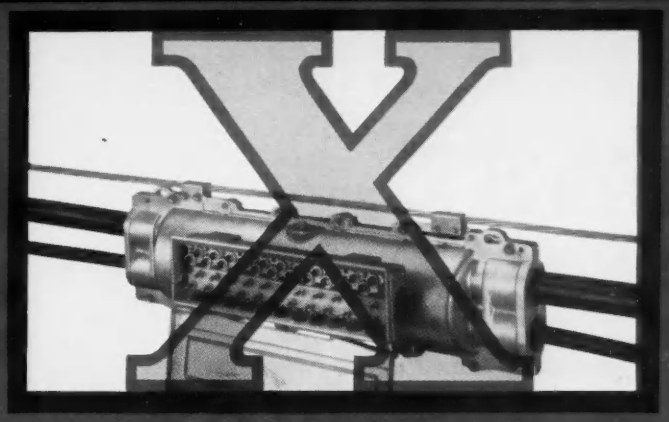
RALPH F. LUCIER

Fort Wayne, Ind., on January 13. He had been admitted to the hospital on January 3 after suffering a heart attack at his home in Warsaw, Ind.

Born at Concordia, Kans., Mr. Lucier moved to Abilene as a young boy. He was a lifelong friend and schoolmate of President Dwight Eisenhower. After graduating from high school at Abilene, he attended Kansas State College at Manhattan, Kans.

Mr. Lucier served as an Infantry Captain during World War I and was present at the first meeting in Paris, France, for the founding of the American Legion. During the years that followed, he was an active member and ardent supporter of the Legion and its activities.

In 1921 he made his first contact with the telephone business when he was employed by the old United Telephone Co. of Kansas (now part of Southwestern Bell) as commercial representative, where he served as local manager and district manager. During the 14 years he was connected with United of Kansas, he engaged in special work on rates and tariffs and brought about the consolidation



Now...
"X" branch splice cases

No. 17 ratchet wrench

Designed specifically for splice cases and splice case terminals. Handle length (3¾") limits the torque that can be applied to clamping bolts. Strongly recommended for use on all splice case installations.

Branch outlets on both ends

Type "X" splice cases and terminals are here, making a total of forty-two different catalog numbers in the line of Reliable splice cases and splice case terminals. Now you can straight splice, "Y" splice and "X" splice. The new type offers all the advantages of the standard models plus branch outlets on both ends of the case.

Both Protected and Unprotected "X" type splice case terminals are available for 6, 11 and 16 pair—or, two units can be used together for 12, 17, 22, 27 and 32 pair terminals. Cable size — 1" to 1.6" O.D., with Adapter available for .3" to 1".

Installation Specification No. 104 describes installation procedures for splice cases and splice case terminals. Send for yours today.

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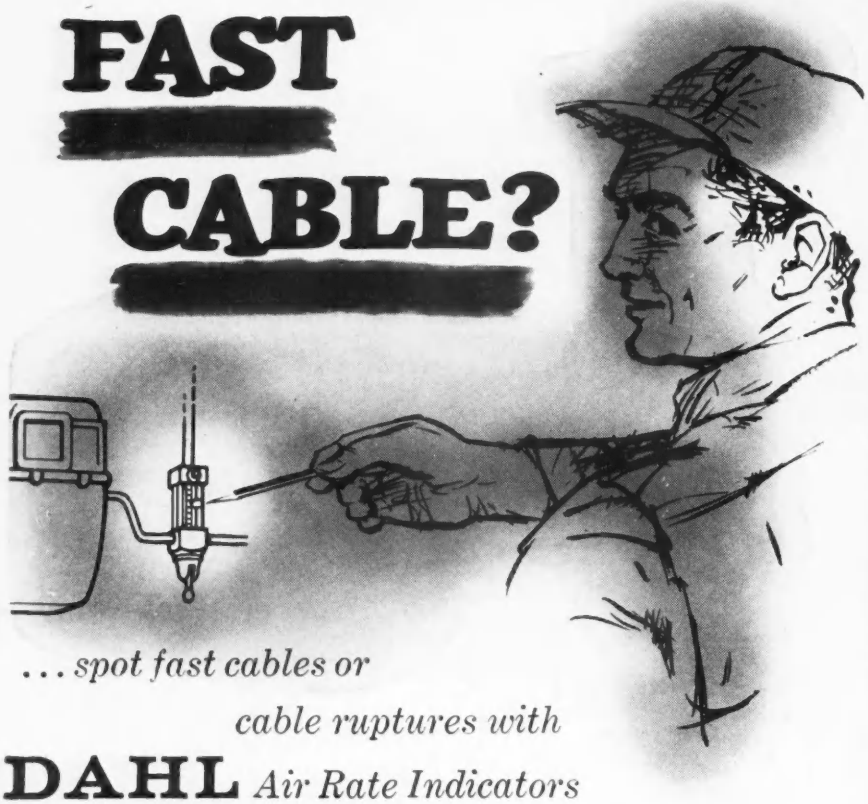
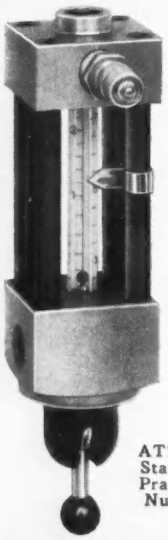


. . . spot fast cables or cable ruptures with

DAHL *Air Rate Indicators*



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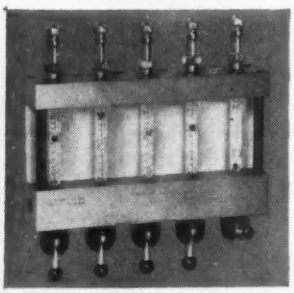

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of several dual exchanges.

In 1935 he accepted the position of vice president and general manager of the operating companies of United Utilities, Inc. in Indiana and Ohio with headquarters at Lafayette, Ind. In 1938 he was made president and general manager of United's Indiana and Ohio properties.

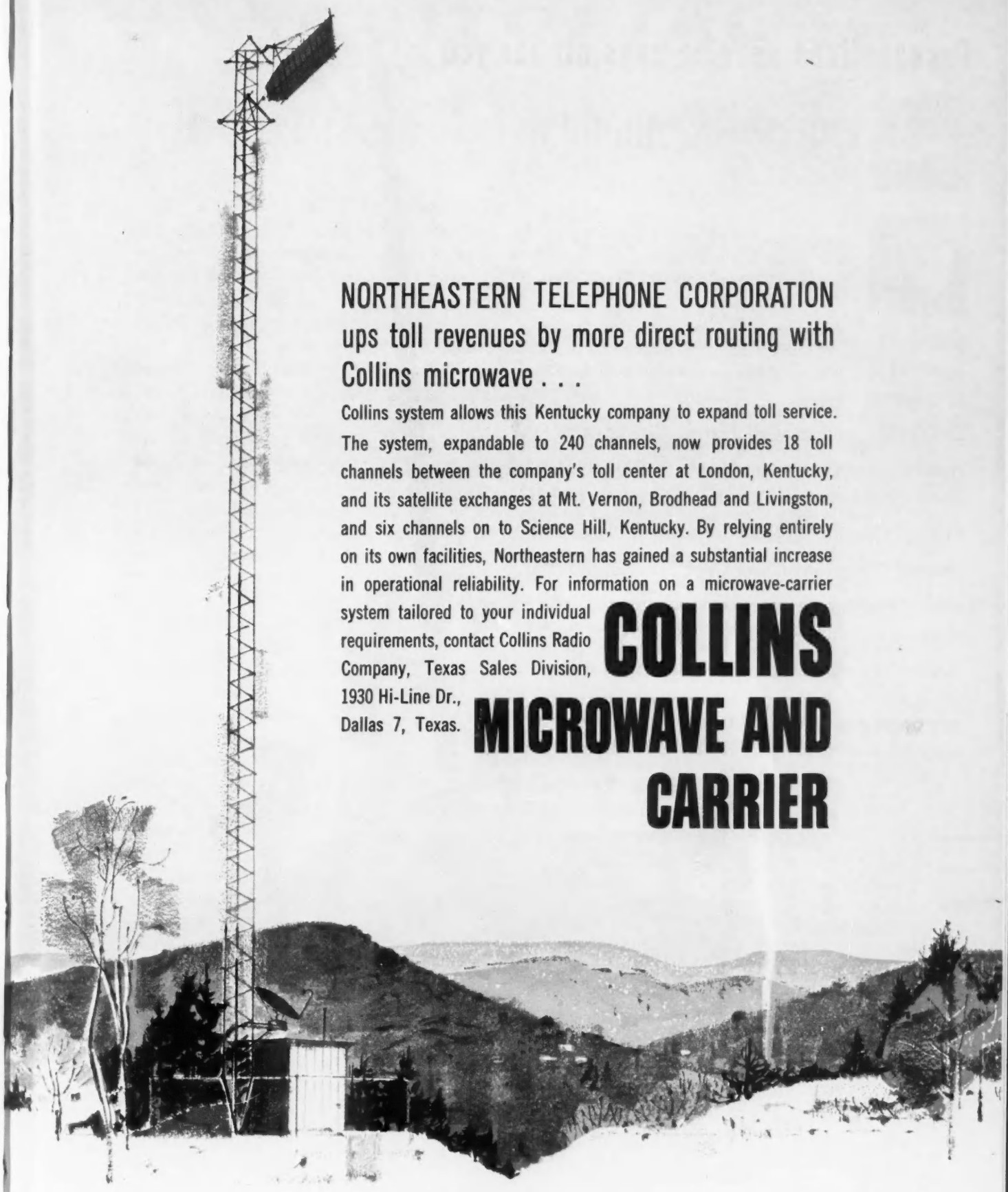
Mr. Lucier served with the National Production Authority's Communications Equipment Division (CED) from August, 1952 to February, 1953. He served CED as consultant and was later deputy director and finally director of the claimant agency for the communications industry in the mobilization program. During his service period he added greatly to contributions of his predecessors in the claimant agency post in establishing recognition by mobilization planning officials of the essentiality of communications in the nation's defense program.

Among his accomplishments during his tenure with the agency were the modification of the NPA's Order M-77, covering the communications industry, that resulted in elimination of much paper work for the industry, and the drafting of a definitive program establishing eligibility of firms in industry for certificates of necessity for rapid tax amortization.

Extremely well known throughout the industry, he was a past president of the Independent Telephone Pioneer Association and had served as a member of the board of directors of United Utilities, Inc.; United Telephone Co. of Indiana, Inc.; Ohio Telephone Service Co.; U. S. Independent Telephone Association, and the Indiana Telephone Association. He was also a member of the American Legion, Knights of Columbus, Holy Name Society and Rotary International.

Surviving is the widow, Ruby Norman Lucier, whom he married at Abilene, Kans., on August 10, 1917; a son, Philip J. of Rochester, N. Y.; a daughter, Mrs. John Stineman of Cincinnati; 19 grandchildren; four brothers and seven sisters.

Services were held at the Sacred Heart Church, Warsaw, Ind., on January 16.



NORTHEASTERN TELEPHONE CORPORATION ups toll revenues by more direct routing with Collins microwave . . .

Collins system allows this Kentucky company to expand toll service. The system, expandable to 240 channels, now provides 18 toll channels between the company's toll center at London, Kentucky, and its satellite exchanges at Mt. Vernon, Brodhead and Livingston, and six channels on to Science Hill, Kentucky. By relying entirely on its own facilities, Northeastern has gained a substantial increase in operational reliability. For information on a microwave-carrier system tailored to your individual requirements, contact Collins Radio Company, Texas Sales Division, 1930 Hi-Line Dr., Dallas 7, Texas.

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CHET: "That's what I'm here for, Harry. How can we be of service?"

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CHET: "No problem at all, Harry. I'll take care of it."

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CHET: "I'll get it out this afternoon, special delivery."

HARRY: "Thanks a million, Chet. Sure appreciate it."

CHET: "Well, we appreciate getting your order. Every single one is important to us, regardless of size."

HARRY: "How about that!"

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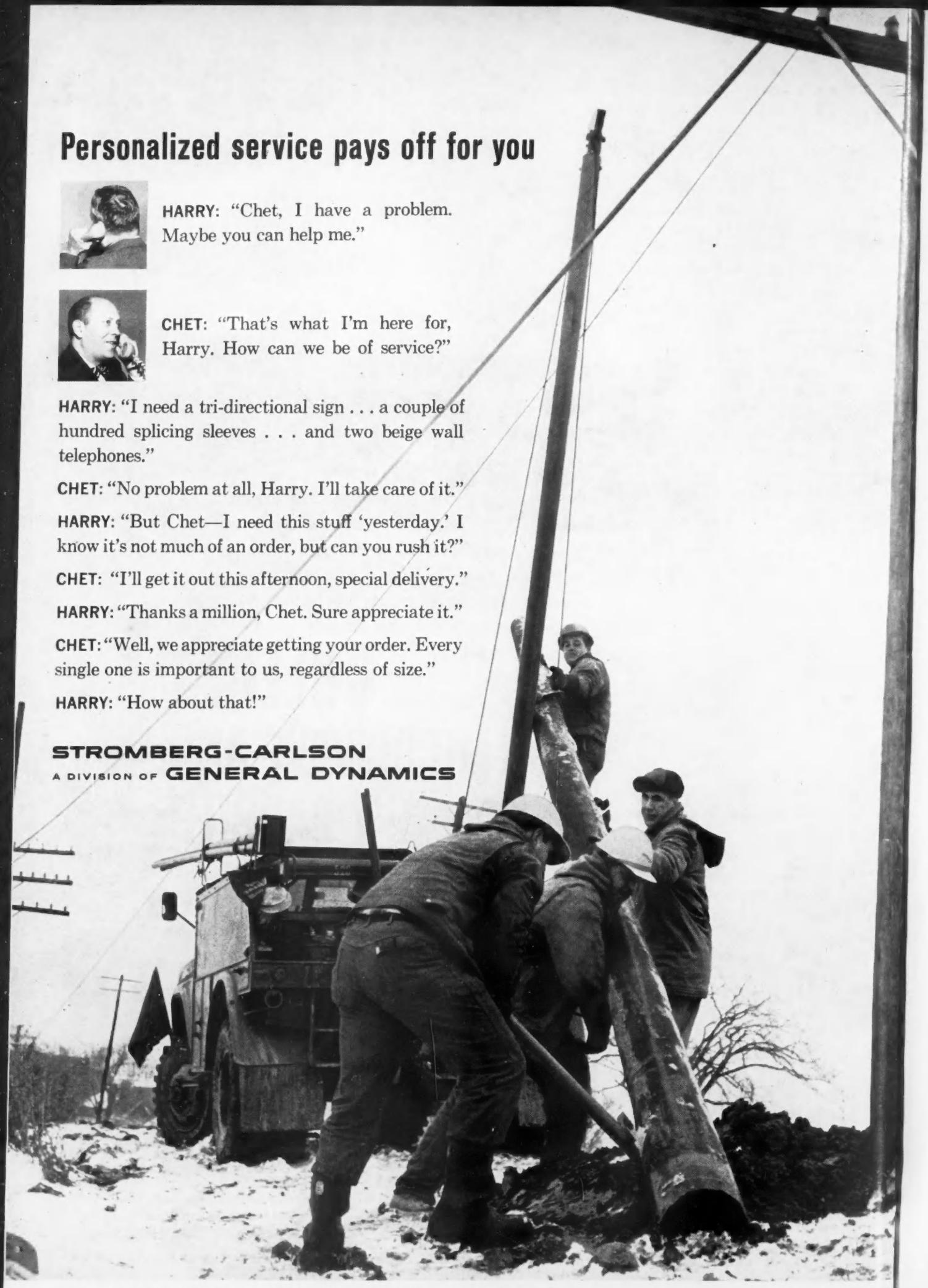

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EDITORIAL

II:-"Letter To A Telephone Subscriber"

DEAR TELEPHONE SUBSCRIBER: —

LAST year, along about this same time, we wrote you a letter. Briefly that letter referred to your telephone bill, and called your attention to one item shown as a separate amount from the regular charge — the 10% Wartime Excise Tax on local and long distance telephone service.

Without mincing any words, we pointed out that you and other telephone users had been paying a tax enacted as a wartime measure of temporary duration month in and month out for nearly 14 years after the end of World War II, and we asked you to write your Congressman and your Senator and protest continuance of the 10% Wartime Excise Tax on telephone service.

Your response was excellent. It was so good that Washington was swamped with letters from telephone users telling the legislators they did "not like the excise tax on telephone service."

Rightfully, the flood of mail from telephone users protesting the continuation of the tax is credited with bringing about a new law to terminate the excise tax on local telephone service on June 30, 1960. We agree that the telephone users of the U.S.A. did a magnificent job in 1959. But 1960 is another year and we are told by our Washington observers that telephone companies and the users of their services face a hard struggle this year when the termination date arrives. Knowing Washington, our prognosticators warn us that Congress can easily vote to extend the present excise tax rates for another year or more, just as it has been doing for several years on liquor, autos, and tobacco.

Of course, we don't want this extension of the excise tax on telephone service to come about anymore than you do. For a tax that was enacted to meet a temporary emergency, we believe it has performed its duty. It helped the nation meet its emergency and, in our opinion, the excise tax on telephone service should be gracefully and promptly retired to some Valhalla to join other tax measures that have served their country well.

Our records tell us that only two home utility services have ever been the subject of a federal excise tax — telephone and electricity. The tax on electricity was imposed in 1941 when a federal tax was imposed for the first time on home telephone service. Yet, in 1951, despite the tremendous demand for federal revenue created by the war in Korea, the tax on electricity was described as excessively burdensome and promptly repealed — leaving the telephone tax as the only one remaining on the federal tax books applying to the four essential household utilities — water, gas, electricity and telephone.

And it will surely remain, we believe, unless users of the nation's 70,600,000 telephones immediately write their Congressmen and Senators and demand (1) that the June 30, 1960, expiration date for the excise tax on local telephone service be observed; and (2) that prompt legislative action be taken to end the excise tax on long distance and other telephone services.

If each telephone user will follow that suggestion, we feel confident the mail addressed to Washington, D. C. will grow in size and importance. And, based on last year's results, we also believe the mail from telephone users will convince Congress that one of the best ways to put more money in the pockets of the voters back home is to completely eliminate all excise taxes on telephone services.

P. S.: We hope your letter will be in the mail tonight.

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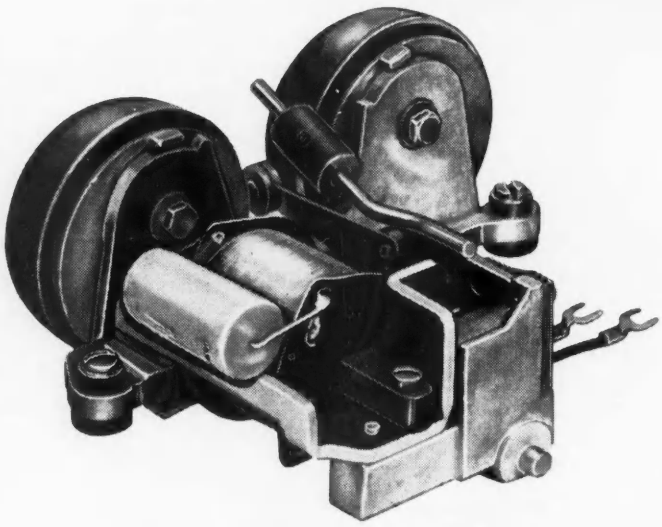

HARMONIC		
Frequency (cps)	*Ordering No. with Volume Control*	*Ordering No. without Volume Control*
16⅔	GB700	GB600
25	GB701	GB601
33⅓	GB702	GB602
50	GB703	GB603
66⅔	GB704	GB604
SYNCHROMONIC		
16	GB705	GB605
30	GB706	GB606
42	GB707	GB607
54	GB708	GB608
66	GB709	GB609
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20	GB710	GB610
30	GB706	GB606
40	GB711	GB611
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Each USI Multi-Frequency Ringer is a welcome answer to the problem of subscriber satisfaction. The best service begins with important small components like the USI Multi-Frequency Ringer. These patented high-impedance signalling devices will fit any "500" Type telephone set that accepts a WE Type "C" ringer. USI Ringers are ruggedly constructed from the finest materials by leaders in the multi-frequency ringer field and embody the best electrical and mechanical features thus far developed.

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"Try to speak, write and figure so you will not be misunderstood. Project that statement into the different departments of your company and you will have taken a long step toward good management."

Management's Top Trouble Maker

By BILL CORMAN*

MISUNDERSTANDING is at the root of most problems, and misunderstanding based on words is the "tap root of the bunch." Today you will speak a thousand words and write a few hundred more. Will some be misunderstood and provide the basis for a minor or major misunderstanding??

IN EVERY facet of our lives, problems beset us, and on many occasions writers and speakers have pointed out that *misunderstanding is at the root of most problems.*

With that proposition, I agree, and I believe *misunderstanding based on words* is the tap root of the bunch.

I write one thing, and from the words, you read something else. The preacher uses some specific words and we hear what we want to hear, which likely is very different from what he intended. Not only does this sort of thing happen all the time, but people have different ideas of what a certain word means.

In my own experience, a classic example involved my English landlady when I was in London in World War II. One afternoon she informed me that she "had been killing ants all day." I inquired what she used, and she answered, "paraffine!"

While I wondered whether she was hitting them on the head with it or melting it and pouring it in holes, she showed me some in a pint jar. I sniffed. It was what I had always known as kerosene, and a misunderstanding was resolved.

Definition of Management

THAT, of course, is an extreme example. A closer-to-home example is the word "management." Most speakers recognize the pitfall of using such a word in a speech and try to get around the pit by defining the word. On occasion they do a fair job, but on many occasions they simply confuse the listener even more, because the words they use as definitives are in turn

*Mr. Corman is manager, Southland Telephone Co., Atmore, Ala.

misunderstood. For example, one of my favorite definitions of "management" is "control" of money and people. But if we were to let it go right there, perhaps by reading the words you would get a different idea of what I mean by "control of money" and "control of people."

Furthermore, such a process can go on — and on — and on. We use "control" to define "management." Then we use "direction" to define "control." Next comes "leadership" to define "direction." Do you see what is happening? I have used a number of really good words, but we aren't any closer to understanding each other — in this case, *your* understanding of what *I* think management is — than when we started.

"Word Users"

WHAT has all of this to do with you and with your telephone business? Just this: you are a constant user of written and spoken words. Maybe you never made a public speech in your life, and maybe you never have had one sentence of your own composition in print. But, on the average, you do speak a thousand words a day and write several hundred. Many of those words will surely be misunderstood, and will provide the basis for at least some minor if not some major misunderstandings.

People who write and people who make public speeches are aware of these facts, because they have run into so much misunderstanding of what they have written or said. But it has been a rather big surprise to me to find many people who don't realize how easily they can be misunderstood — or how easily they can misunderstand someone else.

Here, I would like to interject another of my favorite definitions of management. "*Management is the avoiding of as many misunderstandings as possible, and the resolving of misunderstandings after they happen.*"

Both the "*avoiding*" and the "*resolving*" are important, but it is certainly true that the more we avoid, the less we will have to resolve, and while avoiding is not always easy, it is usually easier than resolving. The managerial emphasis, therefore, should be on the "avoiding" portion.

Now, will I confuse you if I say that using study and forethought is the way to "avoid," and that using simple courtesy is a good way to "resolve?" I will go out on a limb and guess I didn't confuse you. Why? Because the words "study," "forethought," and "courtesy" will hold almost exactly the same connotations for you as they do for me.

Forethought, contemplation, getting the big picture, sifting the important from the unimportant — all of these ideas have been advanced time and again as components of management. I hope they mean more to you now — having arrived at them by way of the "avoiding of misunderstanding" route — than they did before.

"Misunderstanding"

AND FROM here, we take the second step. If you agree with the general proposition that problems beset us all, many problems are the results of misunderstanding, and at least one important way to think of management is the avoiding of these misunderstandings, then I would like to have you peep over the next higher hill.

We have said it is difficult to avoid being misunderstood, and the implication in what has been said so far is that it is difficult to avoid being misunderstood *even when we are trying desperately to be understood.*

Now visualize the situation when we add a very common human ingredient — intentional deceit. If the situation was difficult before, it is now impossible. Unintentional deceit often creeps in as a part of the misunderstanding we have been talking about. But intentional deceit has no place in any part of telephone business management.

Going back to Abe Lincoln, you are not going to fool very many people very long anyhow. And even if you do, the chances are that the main person you succeed in fooling will be yourself. If there is any manager more impotent and incapable than one who has fooled himself about his business, I can't imagine who he would be.

This deceit becomes even more confusing when we apply what we have been saying to *figures* instead of *words*. Actually, figures are short ways of writing long words, and figures fit into this picture just as words do. If anything, most people are even less suspicious of figures than they are of words. When figures are involved people are even less concerned about possible misinterpretation of the facts.

I suppose this is because most people think of figures in terms of irrefutable mathematical laws — in other words — figures don't lie. Well, of course, they don't, but they can certainly be fantastically misused and misinterpreted.

For example. One plus one equals one; one cat plus one cat equals two cats; but one cat plus one dog equals confusion.

Another example: Two plus two equals four, and four is always four. But 2% is not always 2%. A 2% profit to one man may be 6% to another. You have to ask — 2% of *what?* 2% of cost; 2% of sales; 2% of gross profit; or what? They are all 2%, but none are equal.

Percentages are one branch of a large family of mathematics — ratios. And most managers swear by ratios as being the most revealing figures available to them. For example, one of my pets is a "dollars-per-station" analysis. It means more to me to say that rental revenue per station in 1957 was $42.43 in company "A" and $38.15 in company "B" than to just have the four figures that went into those two answers. But dollars-per-station figures are ratios and must be looked at with the same care you would exercise with percentages.

Correct Interpretation

AGAIN, as we have been saying all along, the main thing is not to misunderstand nor to present figures in such manner that they will be misunderstood by

Please turn to page 41

ACCOUNTING NOTES

by G. M. JONES

IV: Depreciation—Theory and Practice

If the principle involved in economic depreciation were applied uniformly, equitably, and consistently, we should find several changes appearing in the corporate income and balance sheet figures — and those changes would not always show what their initiators desire.

(Continued From 1/1 TE&M)

(3) The capital position of owners must be protected. One of the inherent characteristics of the corporate form of ownership is that the common stockholder occupies a *risk* position and that, as a risk-bearer, he is entitled to protection from loss last of all, after all other classes of capital contributors (creditors and debt-holders). In becoming a common stockholder, the investor accepts this residual, risk-taking position. Inflation, like depression, is one of the risks that necessarily accrue to the risk-taking owners of a business. On these grounds, it can be argued that the capital position of the owners, the common stockholders, need not be protected first but *last of all*.

(4) Price-level adjustments for depreciation only? But why? There are other expenses besides use of plant which are subject to misstatement because of price-level changes. Any asset or any debt, the life of which extends for more than a year, is subject to the same price-level influences. Why not adjust all of them, and likewise all of the periodic expenses resulting from them? Carman Blough, of the American Institute of CPA's, says:

"If the concept of business income is to be changed in such a way that depreciation costs will be adjusted because of inflated price levels, it will be completely inconsistent with the concept relating to other transactions affecting business income. To be consistent, for example, a company would have to step up the charge for insurance on a five-year policy for which the premium has been paid in advance and a company with a leasehold would have to increase its charges to rent for any prepayments on the lease. Indeed, any time accrual accounting requires charges or credits to income in a different period from that in which payment is made or received, adjustment would be required if there were a change in the price level in the meantime." (*NAA Bulletin, Aug.* 1959, *p.* 47.)

The Author, G. M. JONES, is associate professor of Accounting & Financial Administration, Michigan State University.

Likewise, there should be an adjustment in the recognition of interest expense to reflect the real burden of the interest payments on debt. For instance, if a bond issue provides for payment of $1 of interest, and if the real value of the dollar has fallen to 78¢, then the real burden of the interest charge is only 78¢, and this effect should be reflected in the income statement. Some authorities maintain that any upward adjustment in depreciation to "real" cost should be offset by a downward adjustment for the "real" cost of interest payments.

Furthermore, to be consistent, any long-term contracts should be so constituted that the expense effects of price-level changes are reflected in the company's determination of reportable income. If contracts do not provide for such adjustments, then an accounting adjustment should be made to reflect the inflationary effect.

(5) It's not the same dollar anymore! The whole proposition of price-level adjustments is predicated on the idea of changes in real value of dollars over a period of years. We all know that 1949 dollars are not the same as 1959 dollars in terms of buying power. Therefore, the premise is valid that the dollars representing the use of long-term assets, in 1959, are different from the dollars with which these assets were acquired.

Again, we point to consistency: if the depreciation charges for the use of an asset are stepped up to adjust for inflation, should not the values at which the assets themselves are shown be stepped up to reflect the price-level appreciation which has come to them?

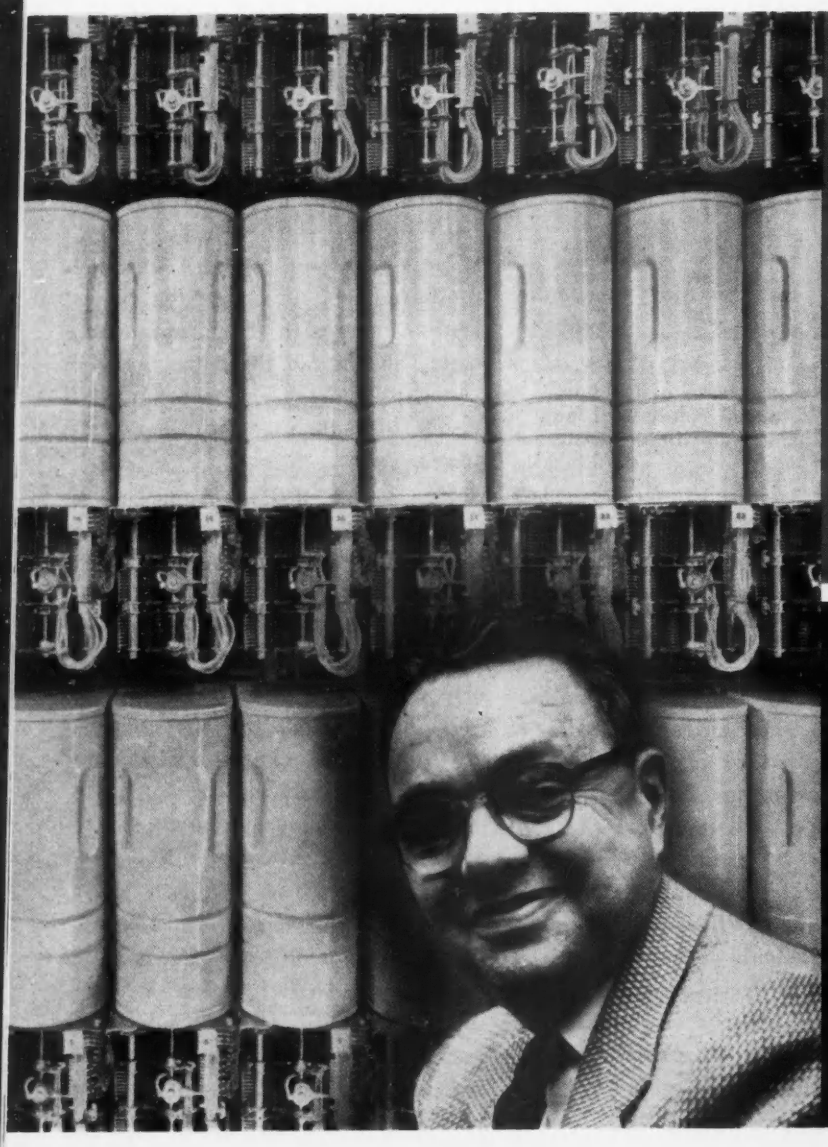
For instance, suppose that some office buildings which were built twenty years ago were restated in value for purpose of increasing the depreciation charges in the income statement. Should not the value then be restated for balance sheet purposes also? This is the only consistent treatment.

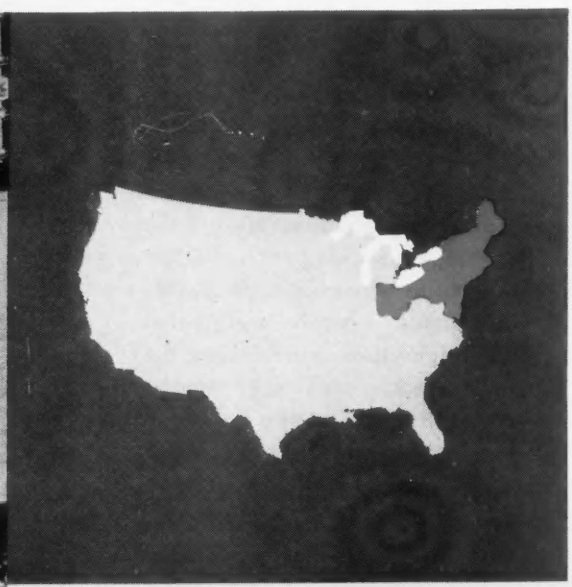
However, if this were done, there would also be a necessary restatement of some associated accounts: the allowance (reserve) for depreciation and the retained earnings (surplus) account; the former increased proportionately to the increase in the asset account itself, the latter increased for the net amount of appreciation in the accounts. Such a consistent statement would result in showing a kind of dollar gain due to appreciation.

I wonder if economic depreciationists would not object vociferously to this consistent treatment (even though the gain were not subject to income tax), because it would show an unearned increment, an apparent improvement in the stockholders'

in the east

TELEPHONE MEN CHOOSE STROWGER!





HOWARD SLUSHER
(president and general manager, Commonwealth Telephone Company of Ohio) is pleased with the operation of Strowger equipment at the Athens, Ohio, exchange. This is just one of the many dial exchanges in the East served by Strowger.
See full list at right.

EASTERN DIAL EXCHANGES SERVED BY STROWGER:

CONNECTICUT
Southbury

MAINE
Naples
Sebago
Standish

MARYLAND
Grantsville

N. H.
Andover
Boscowen
New London
Salisbury
Sutton
Wilton

N. J.
Belvidere
Blairstown
Bloomsbury
Columbia
Great Meadows
Hampton
Highland Lakes
Hope
Lake Mohawk
Oxford
Upper Greenwood Lake
Vernon

N. Y.
Atlanta
Bainbridge
Barlsville
Bemus Point
Berkshire
Bloomingburg
Brewerton
Candor
Caroga Lake
Central Square
Chautauqua
Chenango Bridge
Chenango Forks
Chester
Circleville
Cohocton
Denton
Deposit
Earlsville
Elizaville
Fishers Island
Florida
Franklin
Fredenia
Frewsburg
Fulton
Germantown
Gerry
Gloversville
Goshen
Guilford
Hancock
Highland Hills
Hopewell Junction
Howells
Jamestown
Johnstown
Kennedy
Lakewood
Leicester
Madison
Manlius
Mannsville
Maybrook
Middletown
Monroe
Morrisville
Newark Valley
New Berlin
North Brookfield
Northville
Norwich
Otisville
Oxford
Panama
Phoenix
Pine Island
Red Hook
Rhinebeck
Rotterdam Junction
Sherburne
Short Track
Shortsville
Sidney
Sinclairville
Slate Hill
Springwater
Staatsburg
Steamburg
Stedman
Thompson Ridge
Tivoli
Tyrone
Unadilla
Warwick
Washingtonville
Wayland
West Winfield
Wurtsboro

OHIO
Albany
Amesville
Amherst
Antwerp
Arcadia
Archbold
Ashland
Ashley
Ashtabula
Ashville
Athens
Attica
Austinburg
Avon
Avon Lake
Bellefontaine
Berlin Heights
Birmingham
Big Prairie
Blanchester
Bowling Green
Bremen
Brilliant
Brunswick
Bryan
Bucyrus
Burlington
Byesville
Caledonia
Cambridge
Carey
Catawba Island
Celina
Chardon
Chesapeake
Cheshire
Lewis Center
Chillicothe
Circleville
Clarksville
Clyde
Columbia Station
Conneaut
Curtice
Defiance
Delaware
Doylestown
East Claridon
Elmore
Elyria
Englewood
Geneva
Geneva-On-The-Lake
Germantown
Grafton
Grand Rapids
Granville
Gratiot
Greenwich
Hanover
Haskins-Tontogany
Hayesville
Hebron
Hicksville
Holloway
Jewett
Kelly Island
Kenton
Kilbourne
LaGrange
Laurelville
Lebanon
Leesburg
Lewisburg
Lewis Center
Liberty
Lima
Logan
Lorain
Loudonville
Lucasville
Madison
Mansfield
Marblehead
Marysville
McArthur
McComb
McCutchenville
Mesopotamia
Middlefield
Milan
Montpelier
Mt. Vernon
Mowrystown
Napoleon
Nashville
Newark
New Athens
New Bavaria
New Bremen
New Concord
New Lebanon
New London
New Marshfield
New Philadelphia
New Vienna
New Washington
North Baltimore
North Eaton
North Ridgeville
Norwalk
Oak Harbor
Oak Hill
Oberlin
Old Fort
Ostrander
Ottawa
Oxford
Pandora
Parkman
Pataskala
Paulding
Perry
Perrysville
Phillipsburg
Plymouth
Port Clinton
Portsmouth
Proctorville
Put-in-Bay
Radnor
Ridgeway
Sabina
St. Marys
St. Louisville
Scio
Shelby
Shiloh
Sterling
Swanton
Sycamore
Tiltonville
Tipp City
Terre Haute
Trotwood
Troy
Urbana
Van Wert
Vermilion
Versailles
Wadsworth
Wakeman
Wapakoneta
Warren
Wayne
Wellston
West Alexandria
West Portsmouth
Weston
Westville
Willard
Williamsport
Wilmington
Wooster

PENNSYLVANIA
Adamstown
Allensville
Avonmore
Bally
Beaver Springs
Bedford Valley
Birdsboro
Boiling Springs
Boswell
Boyertown
Brockway
Brookville
Bruin
Butler
Carmichaels
Central City
Chicora
Clarks Summit
Cochranton
Columbia
Conneaut Lake
Conneautville
Conoquenessing
Covington
Curtisville
Dallas
Dalton
Darlington
Denver
Dillsburg
Dover
Driftwood
Dry Run
Eau Claire
East Berlin
Elizabethtown
Emlenton
Emporium
Ephrata
Erie
Evans City
Foxburg
Fredonia
Gibsonia
Glen Rock
Greensboro
Hanover
Harrisville
Hartstown
Harveys Lake
Hershey
Hughesville
Hyndman
Johnsonburg
Jonestown
Kersey
Leatherwood
Leola
Lewisburg
Lititz
Manchester
Manheim
Marietta
Meadville
Meridian
Middleburg
Mifflinburg
Millerstown
Montgomery
Morgantown
Mountville
Mt. Joy
Mt. Pleasant Mills
Muncy
Myerstown
New Bedford
New Holland
New Oxford
New Wilmington
Nixon
North East
North Washington
Osterburg
Parker
Petrolia
Plain Grove
Portersville
Prospect
Red Lion
Reedsville
Ridgway
Rogersville
Sarver
Sassamansville
Saxonburg
Sayerstown
Scenery Hill
Selingsgrove
Seward
Sheakleyville
Shellsville
Slippery Rock
Spring Grove
St. Marys
Sandy Lake
Stoneboro
Terre Hill
Tioga
Topton
Tunkhannock
Turbotville
Volant
Watsontown
Wellsboro
West Sunbury
Wexford
Wilcox
Wrightsville
Yellow House
York

VERMONT
Alburg
Bridgewater
Bristol
Cabot
Charlotte
Groton
Isle LaMotte
Ludlow
Marshfield
Peacham
Perkinsville
Richmond
Springfield

EASTERN TELEPHONE MEN are pretty much like telephone men across the nation—they insist on the best in dial switching equipment. That's why so many Independent telephone men choose Strowger! The number of Independent stations served by Strowger far exceeds those served by all other makes of dial switching equipment *combined!*

NORTH, SOUTH, EAST or WEST, Strowger is best! You can prove this for yourself. Just visit a Strowger exchange and ask the owners if they're satisfied with their dial equipment. Then, get in touch with us. We'll be glad to help you plan for your next dial conversion. Just write Automatic Electric Sales Corporation, Northlake, Illinois, or call Fillmore 5-7111.

AUTOMATIC ELECTRIC GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

equity position due to the upward float of all asset values.

The point is, that if it is not the same dollar for depreciation charges, it is not the same dollar for the other accounts which are related to depreciation and to depreciable assets.

(6) The dollars in which debt is stated. While there is preoccupation with the effects of inflation on asset values, there seems to be little consideration of the hedging effect of corporate debt. Debtors generally gain when prices rise, because they are able to pay the debt back in cheaper dollars; or stated differently, the burden of a fixed debt is reduced as dollars become cheaper.

For companies with a relatively heavy debt structure — and most telephone companies fall in this category — this hedging effect serves to offset the asset valuation effects of inflation. If we are to adjust uniformly and consistently for price-level changes, not only the depreciation charges and the assets should be re-stated for the increased difficulty of renewal, but the debt, as shown in statements, should be adjusted for the increased ease of repayment.

Any argument to the effect that we really have to pay back a fixed number of dollars can be countered with the retort that we have only a fixed number of dollars invested in plant and that if we do not adjust one we should not adjust the other.

(7) Inflation and bondholders: not a corporate concern? Proposed adjustments to protect the stockholders' equity without at the same time an adjustment to protect the bondholders' equity imply a lack of corporate concern for the health of the group that supplies 40 to 50% of telephone company capital. The premise that the corporation is not concerned with the effects of inflation on this group can be attacked on both the grounds of equity and of self-interest. Why should the corporation, or its stockholders either for that matter, enjoy compensation for inflation if that same compensation is denied to an equally necessary and deserving class — its bondholders?

The compensation of shareholders only would compound an inequity which already exists. These people (bondholders) too are entitled to an adjustment in bond interest income to compensate for the loss of the real value of their investments through inflation. Failure to protect and preserve the economic health of this equally important source of expansion capital will accomplish unwittingly what the critics of capitalism have long desired, the "euthanasia of the rentier."

Socialist haranguers would eliminate the "coupon-clippers," regardless of the essential part they play in financing American industry, particularly our utility-type industries. We cannot afford to eliminate this class of capital contributors through our own neglect in protecting their investments against the ravages of inflation. Their position is even more sensitive than that of the stockholders' equity.

Consequences Of Uniform Application Of Price-Level Adjustments

IF THE principle involved in economic depreciation were applied uniformly, equitably, and consistently, we should find several changes appearing in corporate income figures and in balance sheet figures, and these changes would not always show what their initiators would desire. In some cases, conceivably, the net result of all the adjustments for price-level changes could make the corporate position look better rather than worse.

Consistency of application would demand that if higher depreciation figures were used in the income statement for measuring "real" earnings, the same adjusted values should also be used in the balance sheet for stating "real" values for corporate assets, to which the depreciation charges are necessarily related. The total result is that we would have:

(a) a large increase in the dollar amount shown for plant assets.

(b) a large increase in the corresponding accumulated depreciation account (Reserve for Depreciation).

(c) a large reduction in the bonded debt accounts, to reflect restatement in current-valued dollars.

(d) a large increase in the stockholders' equity.

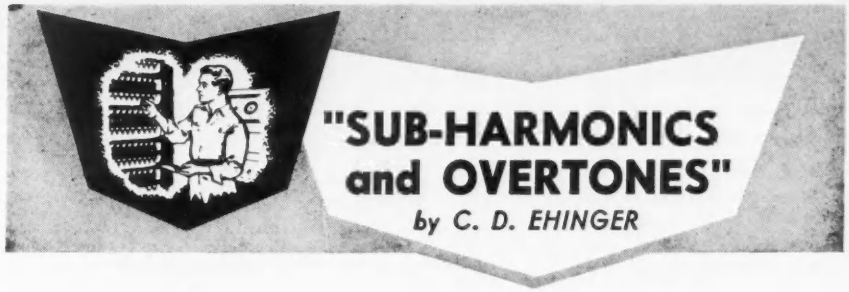
The total effect may be to create an illusion of improvement in capital position, which is just the opposite of what is intended.

A second long-run consequence of increasing depreciation charges, and rates to cover these increased charges, would be to invoke a spiral of price inflation. As long as all businesses throughout the economy are allowed to adjust depreciation (and other charges) for price-level changes, and can pass the increased expense along in prices, we would have an endless spiral of price increases, far beyond anything we have seen yet. Yet it is inconceivable that any one class of business alone be permitted its use.

Most of the same people who are critical of labor efforts to pass on the higher cost of living to employers in the form of higher wage rates are at the same time convinced that business must pass on its increased cost of living to customers. Whatever criticism applies to one applies also to the other. One way to make the adjustment for inflation a little more equal would be to write into all long-term business contracts a cost-of-living adjustment, just like that in our union contracts. This would work both for and against a particular business, depending on its particular contracts. But can you see what an endless chain of price increases this would bring about?

What practical, equitable ways are there for making necessary price-level adjustments?

All the remarks above are not intended to disprove the necessity for some adjustment, but only to warn against a one-sided approach and to insist on protection for all classes of telephone company investors rather than just for stockholders. In the next section of this depreciation series, I will discuss some of the proposals that do not go as far as some companies would like to go, but which at least have some possible chance of acceptance for income tax purposes in the reasonably near future. — *To Be Continued.*



The "Kid" Learns More About Filters

Chuck and the Kid sat at the equipment room test bench of the Centerville exchange. On the test bench was an audio oscillator and an audio vacuum tube volt meter. A "black box," salvaged from the storeroom of the exchange, occupied a prominent place in the center of the bench. The two had just finished identifying the object as a low-pass filter and had run a transmission characteristic curve.

CHUCK spoke up: "What's your idea, Kid, of how to determine the impedance of this filter?"

The Kid hesitated, "I've already told you, Chuck, I wouldn't have the slightest idea. You said you were going to show me how to go about it."

"Sure thing, Kid. Now, we have proven that we have a filter here and we want to know what impedances the filter was designed to 'see' across terminals 1 and 2 and across terminals 3 and 4. In other words, I want to know what impedance I 'look into' at terminals 1 and 2 when 3 and 4 are terminated in their right operating impedance; and I also want to know the opposite story from the angle of terminals 3 and 4."

The Kid was somewhat hesitant. "Keep on talking, Chuck — I'm with you so far but, then, you haven't said anything yet."

"Don't get so doggone impatient, Kid! I'll get around to the point. You might just keep in mind that filters aren't the simplest things in the world and can become mighty complex. Now, I can find what is called the 'image impedance' by a rather simple method. Actually, the formula is this:

$$Z_{I_{1-2}} = \sqrt{Z_{OC_{3-4}} \, Z_{SC_{3-4}}}$$

"Don't let this equation throw you, Kid, because it's harder to write it down than it is to understand it. All it says is that the image impedance, looking into terminals 1 and 2, is equal to the square root of the impedance at 1 and 2, when 3 and 4 are open circuited, multiplied by the impedance at 1 and 2 when 3 and 4 are shorted."

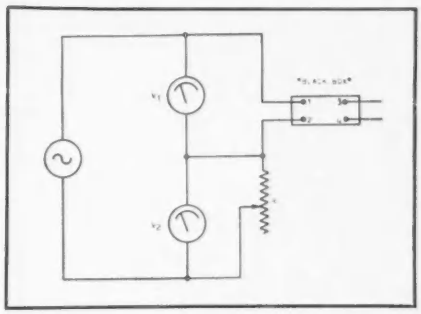
The Author, C. D. Ehinger, is president of Citizens Tel. Co., Decatur, Ind.

The Kid scratched his chin. "Well, that's fine enough, Chuck, in event I know those impedances. But how in the world do I go about measuring those things?"

Chuck gave the Kid a quick sideways glance. "Didn't I ever show you a rough and ready way to easily measure impedances?"

"Don't believe you ever did, Chuck."

"Well, we'll correct that in a hurry," Chuck said. "We set it up something like this — He quickly sketched on paper —



"All we do is put a variable resistor in series with the unknown impedance that we wish to measure and slap an ac voltage across the two. We use two high impedance volt meters with one across each impedance. By adjusting the variable resistance until each volt meter measures the same voltage, we have theoretically split up the voltage into two equal parts and that means that the variable resistor is now equal to the impedance we wish to measure. Actually, this is only a 'rough and ready' measurement because the resistance is close to being a pure resistance while we may have either capacity or inductance in the impedance that we are attempting to measure. This method is certainly not a laboratory method, but it is accurate enough for the purpose of showing you what I want to do here and now."

The two quickly set up the filter and a variable resistance as Chuck had shown on the sketch. The company audio oscillator was used and was set at 1000 cycles. Two vacuum tube volt meters, with balanced inputs, were also placed across the impedances as shown on the sketch.

The Kid boosted the output of the audio oscillator while Chuck watched the meters.

"That's enough voltage, Kid," Chuck called out, "I'm reading about 9 volts across the filter and have a low indication across the resistor."

The Kid moved over and observed Chuck as he adjusted the resistor and carefully watched both volt meters.

"That does it, Kid," Chuck said —

"Both volt meters now read 6.7 volts, so the voltage is split equally across the two impedances. Take the resistor over and measure it on the Wheatstone Bridge and then bring it back."

The Kid quickly measured the value of the variable resistor on the Bridge — "Three hundred sixteen ohms, Chuck!"

"OK, Kid, that's the value of our filter across terminals 1 and 2 with terminals 3 and 4 'open.' Now! Put a jumper wire across terminals 3 and 4 and let's repeat the process."

The two quickly rearranged the setup and again adjusted the variable resistor until both volt meters read the same voltage under the new conditions. The Kid then again took the variable resistor over to the Wheatstone Bridge and measured it — "712 ohms this time, Chuck."

"Fine, that's the value of the impedance across terminals 1 and 2 with terminals 3 and 4 shorted. Now, let's substitute into our equation" — Chuck quickly wrote down on paper —

$$Zoc_{3\text{-}4} = 316\ \Omega$$
$$Zsc_{3\text{-}4} = 712\ \Omega$$
$$Zi_{1\text{-}2} = \sqrt{Zoc_{3\text{-}4}\ Zsc_{3\text{-}4}}$$
$$Zi_{1\text{-}2} = \sqrt{316 \times 712} = 478\ \Omega$$

"Well," Chuck said out loud, "the impedance looking into terminals 1 and 2, or the 'image impedance,' is 478 ohms. Now, let's turn the thing around and repeat the process using terminals 3 and 4 as the input terminals."

It took only a few minutes for the two to completely repeat the process using the other set of terminals as input. As Chuck had expected, the results were almost identical.

"I can't say I'm surprised, Kid, since I had anticipated that we would get the same results in both directions. However we have a case where the image impedance is the same in both directions, so the filter is obviously what is called a 'symmetrical' type. That only means that it has the same configuration in both directions but when this happens we also call it the 'characteristic impedance.' But, getting back to our little 'black box' here, what do you think this filter is designed for?"

"Would it be one of our line filters for carrier use, Chuck?"

"That's it exactly, Kid! And let's mark and tag the thing right now so we don't have to go through this same rigmarole the next time."

Without another word, the Kid marked out a heavy cardboard tag with the proper designation and tied it firmly to one of the terminals of the filter. He looked up at the clock — "Hey, Chuck, we still have about an hour to go before quitting time. You said you were going to tell me a little bit about the make-up of filters and how I could design some simple little ones for some of the horsing around I do in my basement."

Chuck looked at the Kid — "You've built up a few odds and ends of equipment recently — didn't you have to build some power supplies for the various rigs?"

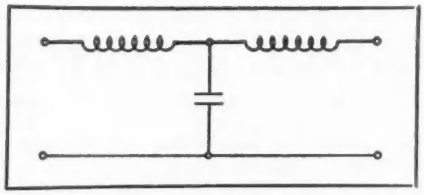
"Sure, what about it?"

"Well, coming off of the rectifier tube in the power supply you undoubtedly used a large condenser and a choke and another large condenser, didn't you?"

"Yep! I sure did. But I really didn't know what I was doing. The circuit diagram just said to put 'em in there — and I put 'em in there!"

"What I'm trying to show you, Kid, is that actually you were using a low-pass filter coming off of the rectifier tube. At this point, you still have ac because, if it is a full wave rectifier, you actually have the positive half of sine waves joined together, and that is a far cry from the pure dc that you hoped to get. What you were doing was filtering out, as much as possible, the 120 cycle wave and leaving nearly pure dc. The heavy condensers and choke which you used are actually a very effective low-pass filter which allows dc to pass, and some ac, but cuts off far below 60 cycles and doesn't allow it to pass."

Chuck continued, "Now let's look at some of the very simple types of filters which we can easily calculate ourselves and set up on the bench and check out. Here is a design for a simple low-pass filter which is called a 'T section'."



In the next issue, the configurations of simple low-pass, high-pass, and band-pass filters are discussed by Chuck and the Kid, and the two design and run bench tests on such simple filters.

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Any comments, criticisms, or suggestions for a future topic? Address all correspondence to "Sub-Harmonics and Overtones," "Telephone Engineer & Management," 7720 Sheridan Road, Chicago 26, Ill.

SUBMIT YOUR PROBLEMS

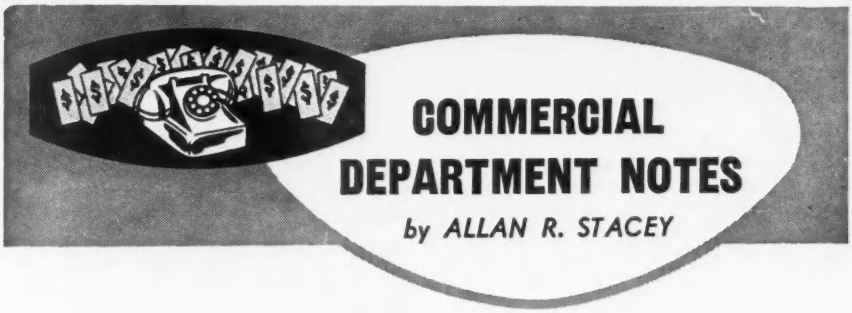
You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in TE&M's regular departmental columns.

Guide To Electronic Buying

DESCRIBED as "a revolutionary innovation in electronics parts catalogs," the new Radio Shack 1960 Guide to Electronic Buying is now available free of charge, to industrial buyers and engineers who mail requests on their company letter heads.

The innovations include an increase to an 8½ x 11 page which permits easier reading of detailed, or tabular, information; rotogravure printing; the inclusion of technical articles, engineering specifications, electronic symbols, schematic diagrams and useful formulas. It also includes a complete index of products and manufacturers. Over 40,000 items are listed in the 312 page issue devoted to industrial electronic parts and equipment. To obtain your copy write *Paul Wickman, Industrial & Government Division, Radio Shack Corp., 730 Commonwealth Ave., Dept. TE&M, Boston 17, Mass.*



"Creating Telephone Diplomats"

When a customer considers it necessary to give his employes training in telephone manners, he comes up with an idea that has helped create a staff of "Telephone Diplomats."

USUALLY you think of your banker as someone who gives you advice on what to do with your money or calls to tell you that your account is overdrawn. Today was different. The telephone jangled at my right elbow and when I picked up the receiver, it was the pleasant voice of the local branch manager of the Bank of America in our community. He said, "Allan, this is Dave. We're planning to conduct a little training program for our employes today and I thought you might like to visit because it relates to teaching employes to be telephone diplomats."

The Author, ALLAN R. STACEY, is vice-president of the Sunland-Tujunga Tel. Co., Sunland, Calif.

A Banker's View of Telephone Manners

IT WAS with great interest that a few days later I went to the bank long before the usual opening hour to see specialists from the bank's general headquarters conduct a telephone training session.

The Assistant Director of Training explained to me that this particular program was designed to improve employe telephone manners by contrasting good telephone conduct with poor telephone conduct without criticizing any particular employe.

The complete training package was made up of a recording session which used role playing cards with supervisors acting as customers, a tape recorder, a group meeting at which the tape was played back, a film strip and a booklet entitled, "Be A Telephone Diplomat."

Now let's see how they used these piece parts.

The Recording Session

EARLIER in the week several employes and supervisors had been brought together and conversations were recorded simulating actual contacts from bank customers. Using very simple equipment of two telephones and a tape recorder, an employe would answer an incoming call and respond according to the previously determined hypothetical situation.

For example, the supervisor might pretend that he was a customer who had had a check returned from the bank for insufficient funds while all the time his account had contained enough money to cover the check. It was the duty of the employe to appropriately, courteously and tactfully handle this particular complaint. The Training Director had 25 or 30 such role-playing situations and recorded eight or 10 of them for playback.

"Alexander's Monster"

SEVERAL days later (and this was the meeting I was attending) all of the employes were called together and were shown a film strip complete with sound track. The film was entitled "Alexander's Monster" and started off with a picture of an old French type telephone and the comment that Alexander Bell's invention requires careful handling. The film strip went on to display the problems encountered by a hypothetical customer, Mrs. Johnson, on her first call to the bank when she encountered Tillie Telephone, who obviously didn't know how to use the telephone in the proper manner.

Later parts of the film strip showed proper usage with concrete and specific examples. The central theme of the entire strip was that every time we answer the telephone we do a public relations job.

The Playback

THE ROLE playing tape recording was played back without comment from the Training Director. The audience simply listened to the recording and in its own mind determined what improvements were necessary by applying the principles taken from the previously shown film.

There were some giggles when people heard their own voices and some laughter at obvious mistakes but all in all the message was certainly getting home.

Following the playing of the tape, a booklet was distributed and each employe carried this away with him.

Be A Telephone Diplomat

THE Personnel Relations Department of the bank had prepared this booklet under the title, "Be A Telephone Diplomat." In simple language and with cartoons, it took the word "diplomat" and developed good telephone manners letter by letter. These are some of the things they said:

D—means speak *distinctly*. If

WHEN YOU HAVE A MINUTE TO SPARE...
OR WHEN YOU CAN'T SPARE A MINUTE

there's nothing like a handy extension phone!

You'll be seeing this happy housewife in many national magazines this month and next.

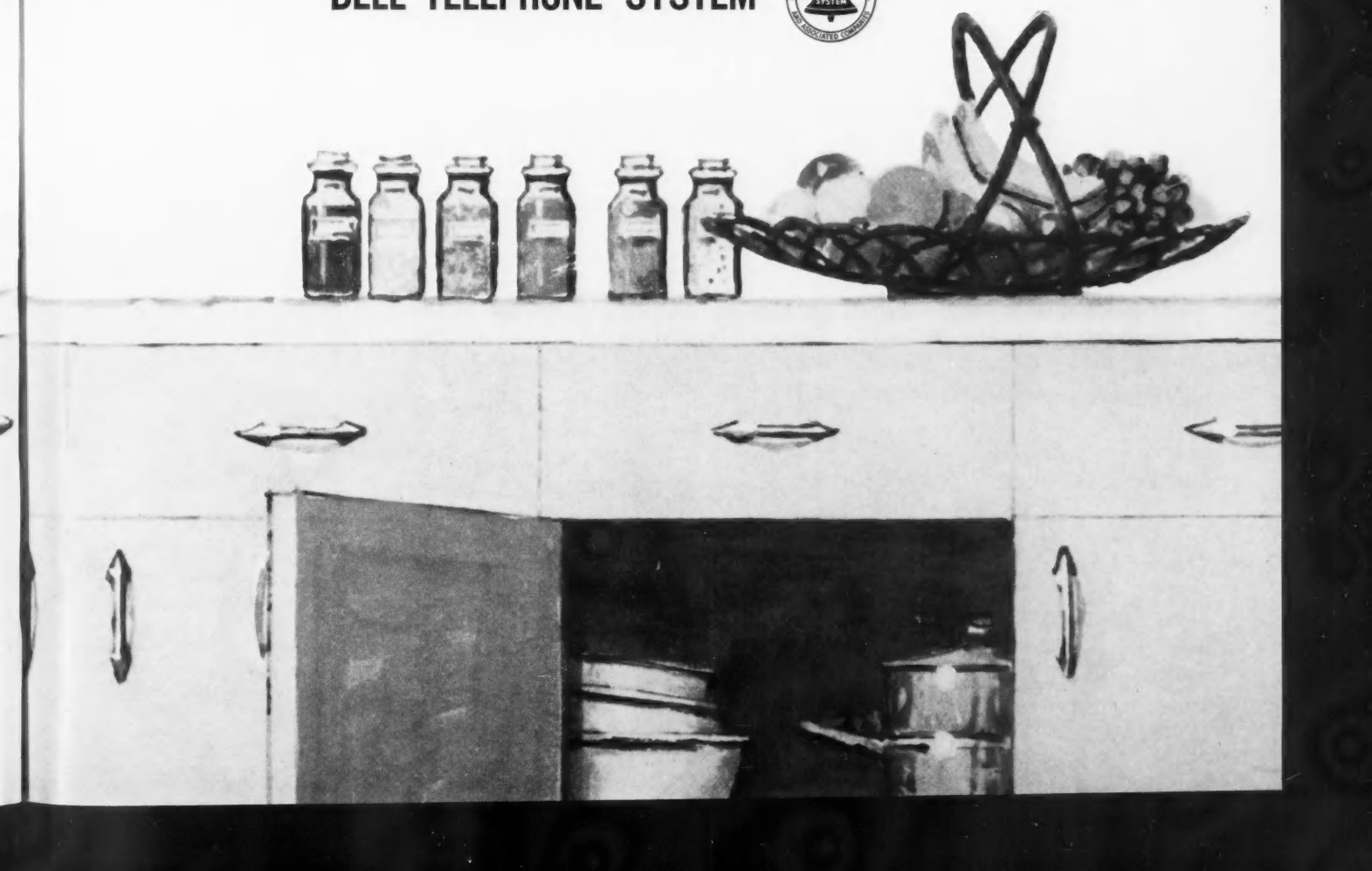
So, we trust, will millions of readers throughout the country.

She's appearing in a full-color Bell System advertisement for extension phones where they're needed in today's homes . . . where the family works, plays and sleeps.

"Doesn't it make sense," we ask, "to put phones where *you* are—instead of running to reach them?"

We think this will make sense to lots of people, and help the sales efforts of *all* of America's telephone companies.

BELL TELEPHONE SYSTEM



you mumble, whisper or swallow your words, you won't be understood. Speak clearly, but don't shout. Your natural, friendly tone of voice is just right. Be yourself.

D—also means speak *directly* into the telephone. Don't dangle the receiver from one shoulder. Hold it close, just about a half inch away from your lips. Then talk to the receiver, not the ceiling or the nearest window with a view.

I — means *identify* yourself and show your *interest.* If you are Miss Adams of the Bookkeeping Department, it's best to say so. Be interested in your caller's request whether she wants to know the balance of her account or complain about a check we haven't honored.

P—be *prompt* to answer the phone and be *pleasant* to the caller. Pick up your phone on the first ring and if you are going to be away from your desk, ask someone else to watch the phone and let him know approximately when you will be back. Be pleasant because the caller may have called one or two other departments before reaching you. (This happens in telephone business offices too.)

L—*learn* to handle impatient callers and *lull* angry callers with sincere understanding. You are A-1 in efficiency if you use a little patience, calm your caller and still produce a speedy answer. If this means leaving the phone, ask if he'll wait while you get the information. No one likes to be left stranded with a "Well, hang on — I'll see."

O—means *obtain* all the facts and *offer* your help. Let your caller finish what he is saying before you jump to conclusions. With sixteen Smiths on file, a simple question may save time and tempers — "May I have your full name, Mr. Smith?"

And it's no help to a confused caller if you tell him, "We debited your account." Technical banking terms don't belong in your telephone vocabulary unless you are sure the caller knows as much about banking as you do. (This is so true in our telephone business. How many of our customers understand what we mean by "tie line?")

M—means doing *magic* with courtesy and *making* a friend by calling him by name. Courtesy means not saying, "You have to" or "You've got to." No one likes to be ordered around.

If you make a friend by calling him by name, be sure you pronounce it correctly. If his name is Mr. Jonas, and you call him Mr. Jones, he may wonder whether the information you gave him is incorrect also.

A — means be *attentive* and *ask* questions tactfully. Listen carefully the first time through, so the caller won't have to repeat.

There is a big difference in the way a question can be worded: "Are you certain your account is with this branch?" is better than, "You don't have an account at this branch."

T—means *transfer* calls correctly and remember to say "*thank you.*" If you cannot help the caller, explain why you want to refer him to another department and ask if you may transfer the call. "I am sorry I don't have that information. Mr. Black in our Note Department handles loan payments. May I transfer you?"

Thank the customer for calling, or express regret if you couldn't help him. Then replace the receiver gently. Remember, from the start to the finish of your call, you are the voice of the bank and your tact and understanding can win a friend or lose a customer.

Bank Program For Telephone People

I CAME HOME so impressed with the quality of the program for bank employes that I asked the Training Director to present his program to my own telephone people. We worked up a series of role playing situations which applied to the telephone business. For example, a customer calling the business office to inquire about a previous balance which he is certain has been paid, or a customer calling to question several toll charges on the monthly bill.

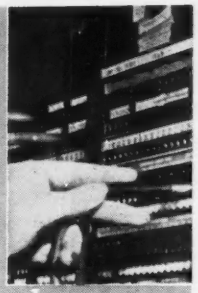
I'll be glad to send you a copy of the booklet, "Be A Telephone Diplomat," if you are interested in developing a similar program. Now . . . let me leave this question for your thinking. If one of our customers considers it necessary to give his employes training in telephone manners, how much more important is it that we teach our own telephone employes to set an example for all the public?

That's all for now. Next issue we'll talk about foreign covers on our telephone directories. See you then. — *Allan R. Stacey.*

Enthusiasm for a job well-done sparked the first telephone call being placed over Troy, Pennsylvania's new dial system to Senator Sordoni, chairman of Commonwealth's board, at cutover ceremonies. JACK SORDONI is joined in conversation with the Senator at his Florida offices by BURGESS WYLE McCLURE, left, and WILLIAM BEAMAN, president, First National Bank of Troy. Cutover to dial at a cost exceeding $540,000, the Troy Exchange serves 1336 stations. With the conversion, the local calling area was considerably broadened and Towanda serves as toll center. The cutover ceremony was well attended by local municipal officials, prominent business men, the press and Commonwealth and Bell Telephone Co. officials.

"Traffic Lights"

By D. A. PERIGO



Expense Comparisons In Feasibility Studies

If you must decide whether you should convert to DDD then you must know (1) your present traffic; (2) your coefficients (work units); (3) your loads; (4) your practices; and (5) your objectives.

IT IS A very natural thing for a man to want to please the boss. The boss may say, "Johnny Bell tells me they are making money with their automatic ticketing equipment and if it works for them, it should for us. You better make a prove-in study." The chances are pretty good that DDD will "prove in" under such circumstances — as far as the study is concerned. From where we sit it seems to us that some of these studies have started with the answer, then worked backward to provide the proof — carefully eliminating any item which would throw the study in the wrong direction.

Let's consider that we have a toll center with five CDO tributaries. We want to decide whether to expand our present manual toll operation or convert to some form of automatic ticketing. There are several types of ticketing equipment — so we also want to decide which type we should use, such as operator identification, subscriber identification, automatic identification, or combinations of these. Also there is a question as to whether we should convert only the toll center or include one or more of the tributaries. Another item for consideration is whether to automatically ticket from only one and two party services. Then, just to be up to date, we will want to know whether to include the ticketing of Person traffic.

We think there are five very important things to know as you start a study: (1) *Know your present traffic;* (2) *know your coefficients (work units);* (3) *know your loads (efficiency);* (4) *know your practices; and* (5) *know your service objectives.*

The Author, D. A. PERIGO, is general traffic superintendent of the West Coast Tel. Co., Everett, Washington.

We think that just calling items *four* and *five* to your attention will be sufficient so we'll discuss only the first three in this column.

Know Your Traffic

WE BELIEVE one of the most disastrous mistakes that can be made is to assume anything about *future* traffic before we thoroughly know our *present* traffic. It is fallacious to believe that two offices are alike because each handles the same number of daily messages. Likewise it is dangerous to think two offices are alike because they have the same number of switchboard positions.

There is no short-cut method of analyzing the traffic. Fortunately tabulating equipment can help you by using pre-cut punch cards to sort and analyze the toll traffic. (If you don't have tab equipment there is probably a tabulating service company near you which would like to help you.)

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

We believe the following sorting and tabulating is required:

(1) Sort by originating exchange.

(2) Sort each exchange by Station or Person.

(3) Sort both Station and Person by Sent Paid, Collect, Credit Card, Third Number — same exchange, Third Number — other exchange, Coin, Hotel, Other.

(4) Sort each of the first five items in (3) above by subscribers' class of service.

(5) Sort all items hourly from 7 A.M. to at least 9 P.M.

If, at this point, you are convinced that this is unnecessary, refer back to the example in the second paragraph and ask yourself how else you can decide the points at issue without the first four items above. (We'll take care of the fifth one later.)

Also you may say that the traffic next year may be quite different. Yes, it may — but how will you know it's different if you don't know what it is now? For that matter the traffic will probably be different the day after the analysis — but not enough to change your basic study.

If you are not under pressure to complete this study, you would do well to analyze the traffic during one of your high months and again in a low month. You may discover the only difference between the high and low months is caused by transients whose calls were made from coin boxes and hotels anyway.

In addition to the toll traffic you

boost revenue with A

AE colored paystations

Paystations in the right locations earn a lot of revenue—and when they're *colored* they earn even more. That's why so many telephone men specify color when they order Automatic Electric "80" Series paystations. They know that colored paystations are a real eye-catcher, even in crowded locations. As a result, more people remember to call more often—and paystation revenue naturally goes up.

Colored paystations are popular with merchants. They help dress up store surroundings. And there are 10 rich colors to blend or contrast with any background: Jade Green, Forget-me-not Blue, Camellia Pink, Gardenia White, Garnet Red, Turquoise, Sunlight Yellow, Dawn Gray, Classic Ivory and Sand Beige.

Automatic "80" Series paystations offer many other features, including:

Reinforced, burglar-resistant housing
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Durable, moistureproof coiled cord
Twin contacts on dial
Extended number plate
Magnetic slug ejector for 25¢ coin channel

For complete information about AE paystations, ask for our Paystation Catalog. Write: Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111. In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16, Ontario.

AUTOMATIC ELECTRIC GENERAL SYSTEM

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will want a special count of Assistance calls handled by the CLR operators because when you have DDD your Assistance traffic will increase.

Know Your Coefficients (Work Units)

WHEN WE mention coefficients we refer to those as tabulated by the Bell System unless otherwise noted. We cannot go into detail in this article, but if you have some special problem we would be glad to discuss it with you.

The proper coefficients should be applied to each final grouping as outlined above. As far as we know this is the only way you can have the flexibility of plan to be able to move a group of calls from one method to another without doing a lot of extra work.

The coefficients we want to mention specifically are those used for operator identification systems. The last ones we saw from the Bell System were on a sliding scale from 2.5 where two identifying operators are on duty to .63 when 20 or more operators are on duty.

The Bell System undoubtedly has reasons for stating coefficients this way — but in other types of operation the coefficient measures the *work* time, whereas with this method they measure idle time as well. Since the lowest coefficient mentioned is .63, we assume this is the one which measures the work time — and this is for a system where the operator says "Your number please."

We have made some checks on a system that employs a "beep-beep" signal instead of a verbal request for the calling number and are satisfied that a coefficient of .45 is satisfactory. It takes a little over one second to say "Your number please," and the difference between a .63 and .45 coefficient is the equivalent of 1.2 seconds — so the .63 seems reasonable.

If we agree that a coefficient of .63 represents the work time satisfactorily but we use a coefficient of 2.5 when we have only two identifying operators on duty it means that this type of operation is only 25.2% efficient (.63 ÷ 2.5). If you use this method when doing your study you will find the efficiency under DDD operation is overstated.

Know Your Loads (Efficiency)

AUTOMATIC ticketing removes from your manual switchboard only the easiest-to-handle traffic. This statement applies whether we are speaking of Station traffic or Person traffic. It follows, therefore, that the difficult traffic remains to be manually operated.

Easy to handle = small coefficient.
Hard to handle = large coefficient.

If you fill a box evenly full of sand you can't get any more sand into it — but if you fill the same box evenly full of rocks you can put a lot of sand into it also.

We think this applies to our toll calls, particularly where there are less than 20 operators on the team. If we look at the problem from the opposite direction, namely, changing from automatic ticketing to manual ticketing, it becomes apparent that some of the calls with the small coefficients can be absorbed between the calls with large coefficients without harming the service.

In our analogy, the confines of the box for the sand and rocks represents the confines of the grade of service rendered on our manual toll switchboard.

This all adds up to a very simple fact: When you have automatic ticketing the load (efficiency) of the manual switchboard will be lower. This means that a part of the traffic expense which is eliminated by automatic ticketing will be needed to compensate for the inefficient handling of the remaining traffic in order to give the same speed of service.

We have recommended a study of your traffic by hours — and waited to this point to mention it again — because what we have said above about the effect on loads is much more pronounced in the off peak hours than in the busy hours. Unless you study the entire picture and compare the expense effects at all hours of the day your study will probably be prejudiced in favor of DDD.

Automatic equipment must be engineered for busy hour usage and at a future period. Your carrying charges continue even when it is idle. Operators are provided on the basis of the traffic expected in *each* hour. Load, then, becomes important for each hour in order to properly determine the daily load to be used for comparative purposes.

Conclusion

REMEMBER there are a lot of considerations besides traffic expenses in a feasibility study, but if your traffic savings are not greater than the carrying charges on the increased investment as well as your increased maintenance expense, it is not an economic thing to do. There are reasons other than economics for converting to DDD — availability of operators for example. But let's make one point clear. If you want to convert to DDD it is entirely your business and you don't need a feasibility study. If you want *to decide whether you should convert* on the basis of economics, then by all means — know your traffic, your coefficients, and your load. — *D. A. Perigo.*

Plastic Pipe Brochure

A NEW six page brochure describing plastic pipe for electrical conduit is now available from Southwestern Plastic Pipe Co.

Included in the brochure are photographs showing how to install plastic conduit, and also specification charts for different kinds of installations.

For your copy write to *Southwestern Plastic Pipe Co., P.O. Box* 117, *Dept. TE&M, Mineral Wells, Texas.*

Clip & Insulator Catalog

NEW DESCRIPTIVE catalog that lists and illustrates a complete line of electric clips is available from Mueller Electric Co.

Catalog covers entire line, from miniaturized clips to welding ground clamps, and includes newest developments (skin-tight insulators to fit wider range of clips, colored insulators, alligator clip adapted for 'phone tip or test prod tip).

For your copy write *Mueller Electric Company,* 1588AA *East* 31*st Street, Dept. TE&M, Cleveland* 14, *Ohio,* asking for Catalog No. 220.

"Top Trouble Maker"

(Continued from page 26)

others. Thus, an important part of management is correct interpretation and presentation of business figures.

I have been in the audience and at the speakers' stand when the speaker pointed out the importance of periodic balance sheets and income statements. And I have seen many small company owners go absolutely blank when the statement was made.

They had seen balance sheets and income statements — their own on occasion, and those of other businesses. But how that tied in with getting telephone service out to Joe Jones, or how it helped preclude the monthly wrangle with Mrs. Simple Simon over her long distance charges, was beyond them.

This blankness came about because some listeners didn't know how to analyze or interpret those statements. To them, the statements were the end of some rather complicated means; they were not the control means to a managerial end.

Statements (and how many times have you heard this?) are tools of management. They should not be tools, bought on the advice of some efficiency expert, paid for with good hard-earned cash, and laid back on the storeroom shelf to rust. They should be tools that are used. Any company which is producing accounting or statistical statements that are not directly or indirectly used to advantage as tools of management is producing sheer waste, and such statements should be discarded altogether or changed so they will be useful. Putting figures together so you can hang pretty charts on the wall is asinine. Putting figures together so management can be appraised of an important fact is the very essence of management!

Proper Use of The Figures

THUS, it is not the statements which are important, but the use to which they are put — the interpretation and analysis. Neither are the statements, in and of themselves, dangerous — it is the interpretation and analysis which subject the statements to misunderstanding. If you think I am trying to say, therefore, that management is a difficult thing, then you are thinking correctly, for I mean to say just that. Management, whatever else it may or may not be, is certainly not easy. And it is a problem that is always with us.

Here is a little story illustrating that fact. I know of a small telephone company which several years ago had the vicious circle of bad rates, bad plant and bad service. Operators were the biggest headache, so the company went dial and got rid of the operators.

Financing had worried management for years, so the officers lined up with a responsible financing agency and licked the money problem. They rebuilt the plant. This cleared up many problems. They increased rates and started earning enough to support the financing program, etc. They did everything so well they are now piling up money in the bank that they don't know what to do with.

My point is that the piled-up money is an important problem for management. Good management may reduce the insistency and the compounding of its problems, but it never reduces their importance. Maybe you think this example is overdrawn, and I will admit it looks like an impossible utopia to most small company owners, but it does illustrate the point I am trying to make.

Management problems may change and the emphasis may shift, but the job of management is always there. I believe I would really enjoy the problem of too much money rather than too little, but I can see that too much would, in itself, be a problem.

Try to speak, write and figure so you will not be misunderstood. Once you have been, try your best to clear it up. If you will project those two sentences into the different departments or parts of your telephone company, you will have taken a long step toward what is called "good management." — *Bill Corman.*

SUBMIT YOUR PROBLEMS

You are invited . . . to tell TE&M authors your problems of department policy or procedure on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in our columns.

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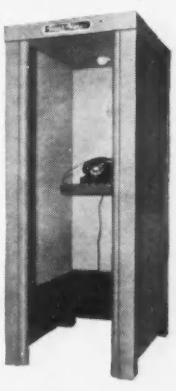

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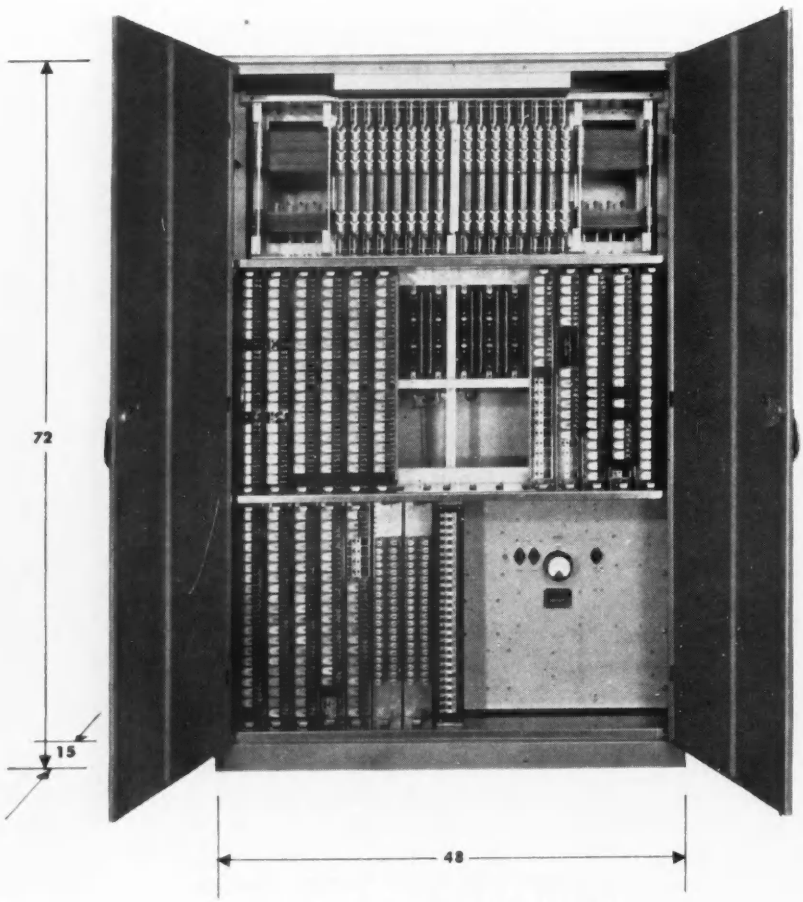
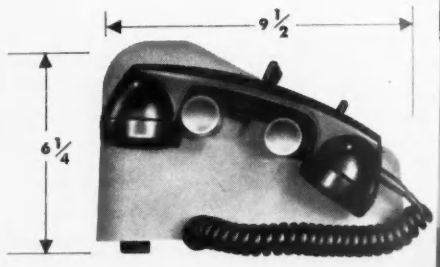
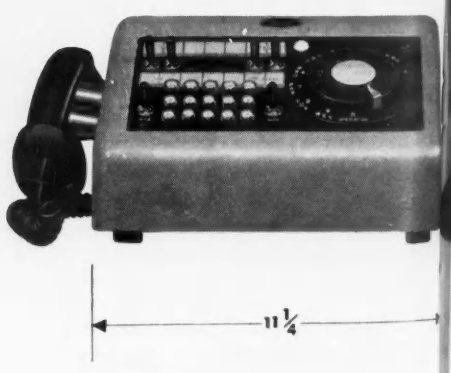


Switchboard bay for Leich's 40A PABX

The LEICH
40A PABX





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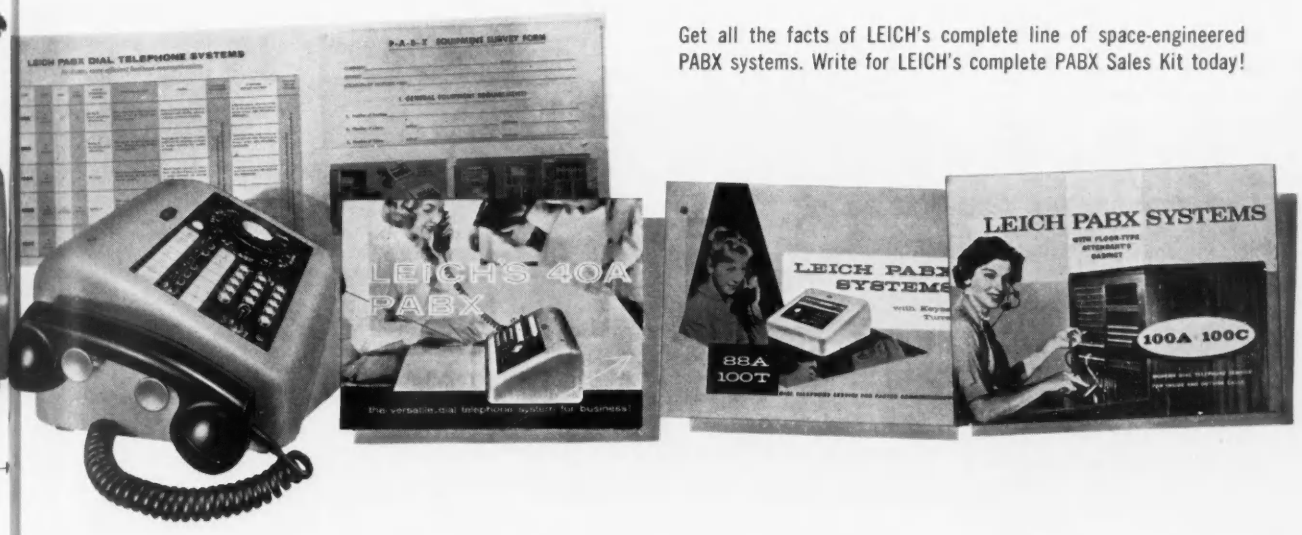

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PLANT NOTES ON NEW DEVELOPMENTS

by JOHN S. REED

Ladder Leveler Provides Sure Footing

Sure footing for ladders placed on uneven surfaces is assured through use of a foolproof and automatic ladder leveler that eliminates blocking and tying-off.

Ladder Leveler for Setting Up Ladder on Uneven Surface

INSTALLERS and combinationmen often have had to set up their extension or single ladders on uneven surfaces such as stairways, inclines or slopes, roofs and the like. In such situations, they have to use a board or other temporary shim to place the ladder level. Such makeshift methods are unsatisfactory and hazardous to workmen.

Sure footing for ladders on uneven surfaces is assured through use of a foolproof and automatic ladder leveler.

This device levels and locks itself when the ladder is set in place, eliminating blocking and tying-off. Each leg automatically seeks its own level and is locked in position by the weight of the ladder.

Rust-proof extruded aluminum legs feature gear racks inside. The legs are connected by a telescoping rung, enclosing a drive shaft and gears which interlock the racks. The gears raise and lower each leg to the proper level and self-lock.

The Putsy Foot automatic ladder leveler enables workmen to climb a ladder for trimming trees safely. *(Barberton Aluminum Specialties Co.)*

JOHN S. REED, TE&M's technical editor, is plant methods supervisor, Lincoln (Neb.) Telephone & Telegraph Co.

The light-weight automatic leveler is attached to ladders of any length, up to 26 inches in width, and virtually any type, including spread or flared base ladders. Each leg has up to 27 inches of self-adjustment. The leveler is adaptable to all types of safety feet.

Sewer Jointing Compound For Conduit Joints

CONCRETE conduit for underground telephone cable requires a special sewer joint compound for sealing joined ends.

For rapid sealing with pressure gun or trowel, there is available a GS-702 cold applied mineral-filled plastic ready-mixed troweling type asphalt sewer sealing compound. This compound is applied to concrete tongue and groove type pipe in the following manner:

1. Apply one brush coat of GS-702 primer to the surfaces to be jointed on the pipe ends at least 24 hours prior to laying the concrete pipe.
2. Set the pipe in the trench and trowel a ½" thick layer of compound on the groove end covering about 2/3 of the joint surface around the entire pipe circumference. (A pressure gun may be employed.)
3. Shove home the tongue end of the pipe and smooth off excess compound which may have squeezed out of the joint.

The joint compound is ready to use direct from the container, requiring no mixing, thinning, or heating. It is said to be fast and sure in application, resulting in low cost per joint. The trench may be backfilled immediately, permitting gradual hardening to a tough and flexible seal that resists acids and alkalis and root penetration. Pipe line movements or settling is stated not to cause cracking of the compound.

Copper Plating Protects Steel Wire & Improves Transmission

STEEL WIRE with a copper jacket applied by a continuous electroplating process is a recent development of interest to telephone companies. This is Copperply wire which is available in 30 percent or 40 percent conductivity grades to meet communications requirements. This wire conforms to ASTM specifications.

The copper coating of the new wire is said to be so secure and so uniform that it can be severely twisted, bent, flattened or even roll-threaded without rupturing the coating or otherwise exposing the steel core. This assures extended service life and maximum rust protection regardless of service requirements.

The electroplating process permits the Copperply wire to be furnished in continuous, non-welded lengths up

to 600 pounds in weight. The wire is produced in a full range of standard sizes from .040″ to .310″ diameter with a wide choice of precisely controlled coating weights available. Flexibility is likewise offered in core steel analysis, ranging from annealed low carbon to hard drawn high carbon grades.

The Copperply wire is made to the following specifications with precise concentricity.

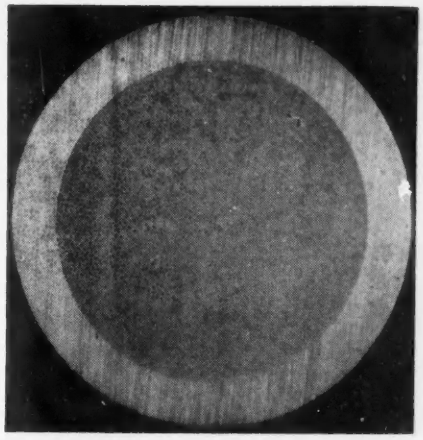
Maximum copper thickness variation . . . less than 1% of diameter.

Minimum copper thickness (30% conductivity) . . . 11.5% of radius.

Minimum copper thickness (40% conductivity) . . . 18.5% of radius.

The process, owned and perfected by National-Standard Co., of Niles, Michigan, electrolytically plates copper around a steel wire core. The wire moves as a helix through successive tanks picking up sufficient copper to make wire having up to 40 percent equivalent conductivity. Concentricity of the copper thickness around the steel is held to approximately 1% of nominal wire diameter.

After plating, the copper jacketed wire is cold drawn to desired size by conventional wiremaking methods with the copper-steel bond unaffected by the drawing. The finished wire can be formed and bent without affecting the bond.

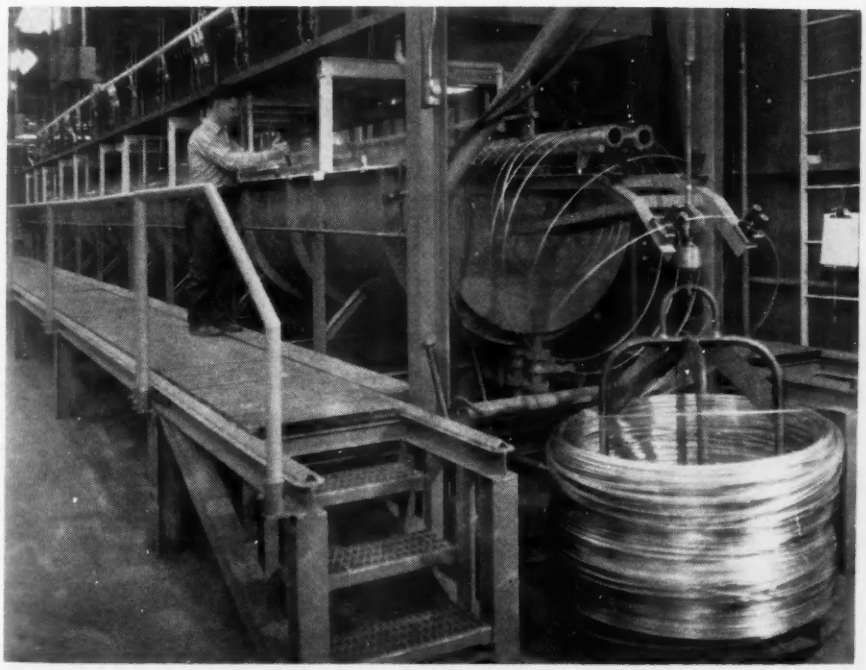


Illustrating uniformity of copper coating in Copperply wire obtained by electroplating process. ***(National Standard Co.)***

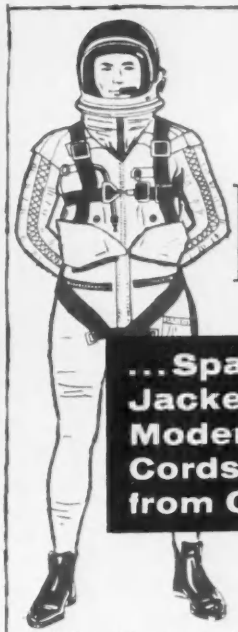
New Type of Strand Clamp Cuts Installation Time 30 Per Cent

SEVERAL types of strand clamps and grips are in use for guy and messenger strand to poles and to anchors. The self-locking type clamp shown is a recent development.

This clamp is made up of four parts, a housing equipped with two adjustable hard steel rollers, which lock the strand by friction, two clips that slide over the main body of the housing, and a safety bar that slides in between the clips to lock them per-



This electroplating process deposits copper on a continuous helix of steel wire.



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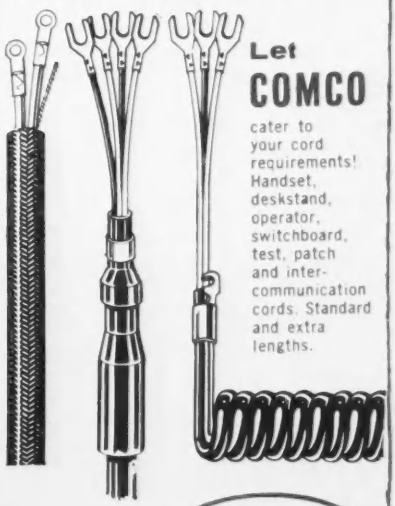
Today's and tomorrow's demands on your system calls for ever tougher, more durable and trouble free equipment. In cords, that's P.V.C. from COMCO,

Superior to Neoprene in toughness and crack resistance, this P.V.C. (Poly-Vinyl-Chloride) jacketing has other advantages, too. Jacket's smoother inner surface permits conductors to flex freely . . . eliminates binding and fracturing —thus assuring longer noise-free life.

P.V.C. jackets are standard on all COMCO straight cords and Spiraflex Rectractile Cords . . . choice of black or ten colors.



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Lenkurt equipment lets you *add as you grow*, the "building-block" way, with the full assurance that what you install today won't be outdated tomorrow.

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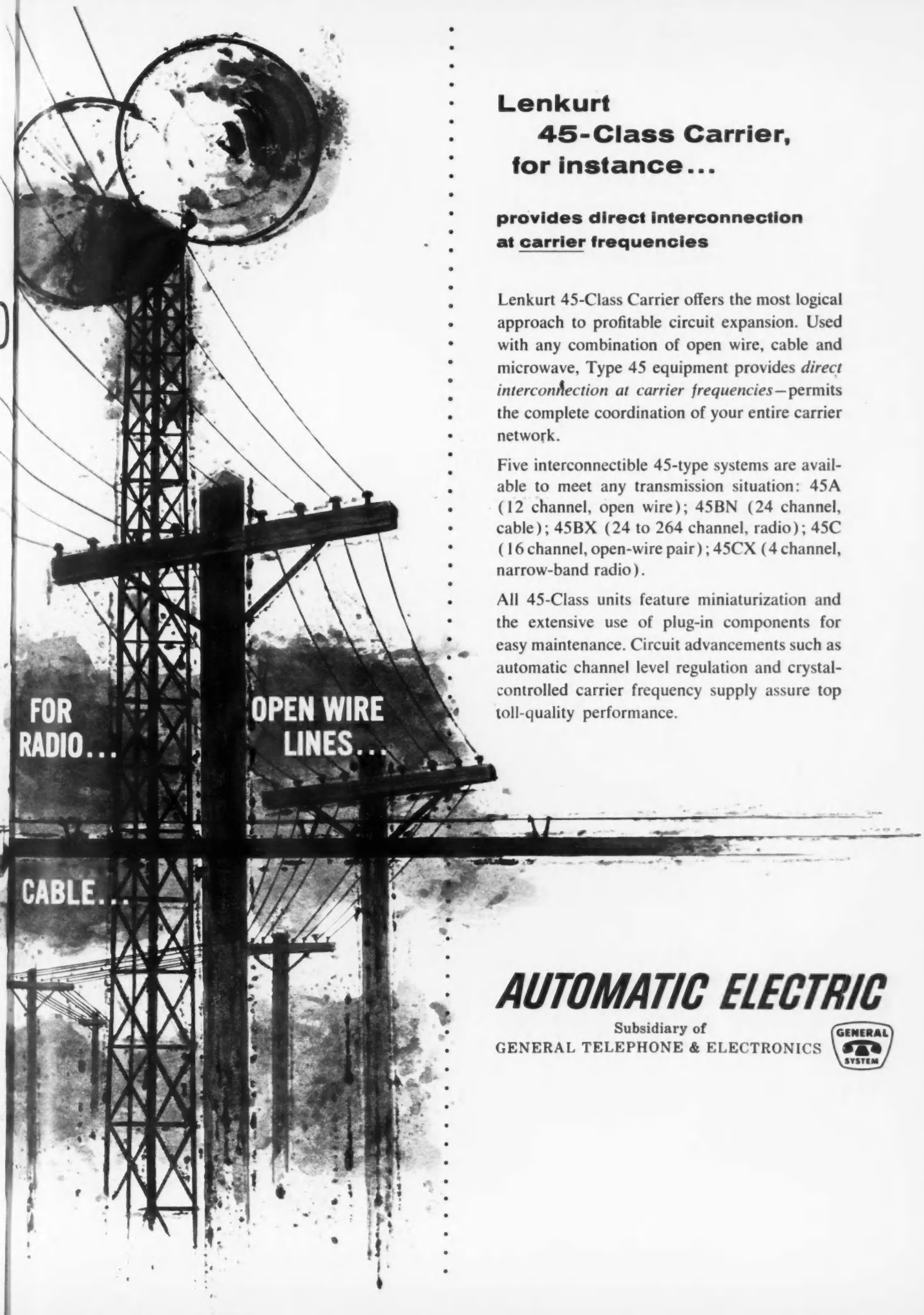

Lenkurt 45-Class Carrier, for instance...

provides direct interconnection at carrier frequencies

Lenkurt 45-Class Carrier offers the most logical approach to profitable circuit expansion. Used with any combination of open wire, cable and microwave, Type 45 equipment provides *direct interconnection at carrier frequencies*—permits the complete coordination of your entire carrier network.

Five interconnectible 45-type systems are available to meet any transmission situation: 45A (12 channel, open wire); 45BN (24 channel, cable); 45BX (24 to 264 channel, radio); 45C (16 channel, open-wire pair); 45CX (4 channel, narrow-band radio).

All 45-Class units feature miniaturization and the extensive use of plug-in components for easy maintenance. Circuit advancements such as automatic channel level regulation and crystal-controlled carrier frequency supply assure top toll-quality performance.

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Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

Crapo HTL-135

EVERYTHING YOU NEED IN A GOOD RURAL TELEPHONE WIRE

Ample Conductivity
Superior Strength
Dependable Life
Low Cost

When you or your engineers specify a telephone wire for rural lines you want to be sure that it will fulfill every practical requirement yet be economical to install and maintain. Crapo HTL-135 High-Tensile Line Wire was conceived and developed with that purpose in mind. Its voice transmission and ringing qualities are excellent for subscriber loops in typical rural systems. Its superior physical strength and its fatigue endurance make posible long-span, low-cost construction with an adequate margin of safety and a minimum of maintenance.

Comparative cost studies show that substantial savings can be realized by building rural lines with Crapo HTL-135. For dependable and economical performance, insist upon this reliable, time-proven conductor!

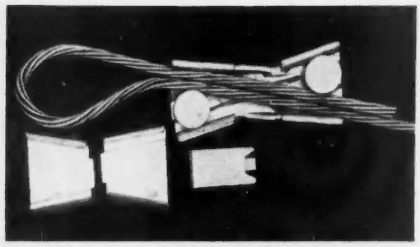
WRITE for Engineering Manual TM-59 containing Sag and Tension Data, Staking Tables and Guying Tables.

Crapo HTL-135
INDIANA STEEL & WIRE CO., INC. MUNCIE, INDIANA U. S. A.

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana

manently. The clamp weighs 1.2 pounds and will take strand 5/16-inch to 3/8-inch in diameter, corresponding to 6,000 and 10,000 pound sizes of strand. Another size of clamp is being developed for accommodating 7/16-inch 16,000 pound strand.

The self-locking clamp is stated to have the advantage of effecting a 30



The French self-locking strand clamp is said to effect a 30% reduction in labor and installation time. Shown assembled on the strand is the housing with adjustable rollers. The two clips shown are placed over each end of the housing to complete the assembly, and the small safety bar is inserted between the clips to hold them in place. ***(Clamps, Inc.)***

to 50 percent reduction in labor and installation time compared to other types of clamps, ability to hold without slipping beyond the breaking strength of the strand, and a capacity for holding more than one strand size.

Cook Electric Co. has announced the appointment of LEONARD L. RUGGLES as chief engineer of the Wirecom Division, which manufactures telephone distribution and protection equipment. Ruggles was formerly chief telephone engineer of the Automatic Electric Co. and vice-president of its sales corporation. He is a graduate of Purdue University and a veteran telephone man.

Boissy Named Kellogg Advertising Manager

GILBERT E. Boissy has been named advertising-sales promotion manager of Kellogg Switchboard & Supply Co.

For the past 18 months, Boissy has been account supervisor at P. R. Mallory and Co., Inc., Indianapolis, Ind.

GILBERT E. BOISSY

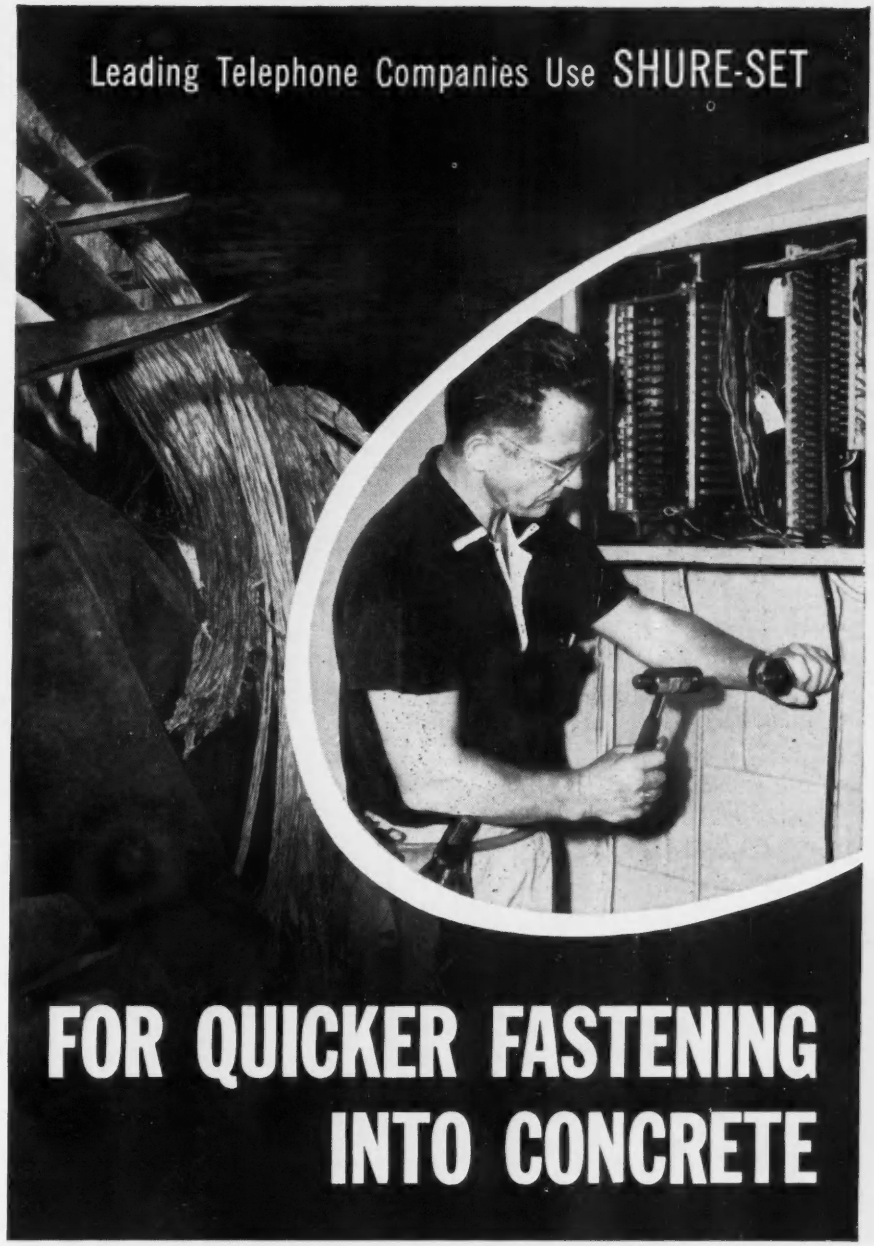
Previously, he was director of marketing with Aetna Steel Products Corp. and marketing manager for Royal Metal Manufacturing Co., both of New York City.

A native Chicagoan, Boissy attended St. Louis University, received a Certificate of Engineering from New York University, and was graduated from Washington University with a Bachelor of Arts degree.

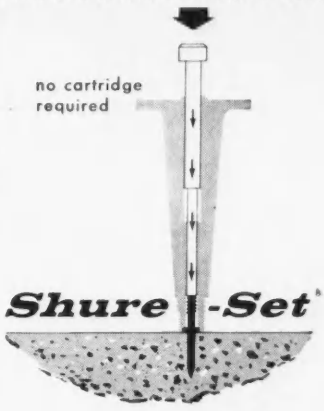
Kellogg Names Booty Assistant Advtg. Mgr.

ROGER H. BOOTY has been appointed assistant manager of advertising-sales promotion at Kellogg Switchboard & Supply Co., Chicago, communications division of International Telephone & Telegraph Co. Booty will be responsible for technical assistance in commercial and industrial areas.

A native Chicagoan, Booty was graduated from Chicago Technical College with a Bachelor of Science degree in electrical engineering. He has been with Kellogg for three years, serving in engineering capacities in research and development, central office equipment, Government tele-



UNIQUE POWER CONCENTRATION PRINCIPLE



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To cut installation time and increase worker effectiveness, a special Shure-Set fastening tool is available for the telephone industry. This hammer-in tool sets austempered fasteners into concrete without pre-drilling or plugging . . . it also converts in seconds to an efficient drill holder for "twist and turn" work.

Shure-Set tools, threaded studs, drive pins and wire loop fasteners have been thoroughly tested and proved in the laboratory and on-the-job! Now Shure-Set has been adopted by many companies as the new standard for light fastening. Write for facts today on how Shure-Set can save you time and money!

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FINANCIAL DATA ON TELEPHONE STOCKS

January 18, 1960

	DIVIDEND	BID	ASKED	LAST SALE
American Tel. & Tel.	$3.30			82¾
Anglo-Canadian Tel. (Brit. Col. & Dom. Rep.)	1.20	34	36	
Bell Tel. of Canada	2.20			45¼
British Columbia Tel.	2.20	44⅛	46⅛	
Calif. Interstate Tel. (Calif-Nevada)	.70	15½	16¼	
Calif. Pac. Util. (new) (Calif. Ore. Nevada)	new rate not set	20	21½	
Calif. Water & Tel.	1.28	27	28¼	
Carolina Tel. & Tel. (Carolina)	1.60	36½	—	
Central Elec. & Gas (Minn. Ill. Ia. Wis. Va.)	1.00	22½	23¾	
Central Telephone (Minn. Ia. N. C. Va.)	.88	22½	23¾	
Chenango & Unadilla Tel. (N. Y.)	1.20	26	27½	
Cincinnati & Suburban Tel. (Ohio)	1.50	90	94	
Citizens Utilities (Calif. Pa.) "A"	stk. only	14⅜	15⅜	
Citizens Utilities (Calif. Pa.) "B"	.52½	12⅝	13⅝	
Commonwealth Tel. Co. (Pennsylvania)	.90	19	20	
Florida Telephone Co.	1.00	28¼	29½	
Gen. Tel. & Electronics Corp.	2.20*			82¾
Hawaiian Telephone Co. (Hawaii)	1.00	20½	21½	
Indiana Telephone Co. (Indiana)	.50	22	—	
Inter-County Tel. & Tel. (Florida)	2.00	56½	60½	
Inter-Mountain Tel. (Va. & Tenn.)	.80	15⅞	16¾	
Jamestown Tel. (New York)	5.60	80	—	
Lincoln Tel. & Tel. (Nebraska)	2.60	62	—	
Lorain Tel. Co. (Ohio)	1.40	32½	—	
Middle States Tel. (Illinois)	1.00	24¾	26¾	
Mountain States Tel. & Tel. (Ariz. Colo. Mont. Tex.)	6.60			169¼
New England Tel. & Tel. (N.E. states)	1.72			36⅜
North Carolina Tel. (Nor. Car.)	none	1⅝	2	
Northern Ohio Tel. (Ohio)	1.60	53½	—	
Pacific Tel. & Tel. (Calif. Wash. Ore. Nev. Ida.)	1.14			29⅞
Peoples Telephone (Penn.)	4.00	85	—	
Pioneer Tel. Co. (Minn. N. Dak.)	1.00 + stk	36½	37½	
Rochester Telephone (New York)	1.00			25¼
Southeastern Tel. (Florida)	.90	21½	23½	
Southern New England Tel.	2.20	44½	47	
Southern Nevada Tel. (Nevada)	1.00	22½	24½	
Southwestern States Tel. (La. Ark. Okla. Tex.)	1.20	23⅛	24⅝	
Telephone Serv. Co. of Ohio (Ohio) "A"	2.80	132	—	
Telephone Serv. Co. of Ohio (Ohio) "B"	2.80	140	—	
Tidewater Telephone Co. (Virginia)	1.10	25	—	
United Utilities	1.10	40¼	42¾	
West Coast Tel. (Wash. Ore. Calif.)	1.20	24⅛	25½	
Western Utilities	.36	7⅝	8¼	
Western Light & Tel. (Mo. Ia. Kans.)	2.00	41½	43½	

(Source of Market — DEAN WITTER & CO.

*Reported erroneously as $2.64 in last issue

phones and industrial relays. Previously he had been employed as an electrical engineer by Automatic Electric Co., Chicago. He served with the U. S. Army in Japan and Korea from July, 1952 to April, 1954.

Highway Trailer Names Wedeman as Utility Head

D. V. (JOE) WEDEMAN has been appointed general sales manager of the Utility Division of Highway Trailer Company. He was formerly general sales manager of Maytag East Coast Co., Jacksonville, Florida.

ITT Announces Personnel Changes

FURTHER moves to strengthen its world-wide management organization were disclosed last month by International Telephone & Telegraph Corp. in the advancement and appointment of several key executives.

In announcing the personnel changes, H. S. Geneen, president, explained "This is another step towards our objective of drawing together the entire ITT system into a truly integrated communications and electronics enterprise."

Henri Busignies, former president of ITT Laboratories, has been named vice president and general technical director of the parent company for closer coordination of ITT's global research and development activities.

Replacing Busignies and also taking over as president of ITT Federal division, a manufacturing arm of ITT, is I. Nevin Palley, formerly senior vice president of Temco Aircraft Corp., Dallas. Palley has had extensive technical and managerial experience in the aircraft industry and, at Temco, reorganized that corporation's engineering and electronics departments into a single "weapon systems concept" organization.

A. G. Kandoian, vice president-communication systems at ITTL, has been made vice president and general manager of the Laboratories.

Two former members of Busignies' staff at the Laboratories, Robert S. Carruthers and Paul Adams, have been made assistant technical directors at ITT headquarters.

P. C. Sandretto, formerly vice pres-

ident and technical director of the Laboratories, has been moved to the position of deputy group executive — U. S. defense group. Also named to the defense group is E. J. Whalen as director of contract administration.

C. M. Mooney will continue as head of the government relations department, with offices in Washington.

Suttle Announces New Printing Division Manager

C. L. LINEBERGER, executive vice-president of Suttle Equipment Corp., recently announced that the Suttle Printing Division now has a new manager, Reuel Buchanan.

Buchanan has had extensive printing experience in both letterpress,

REUEL BUCHANAN

offset, and directory printing with a total of 22 years in the graphic arts industry.

He originated the "talking book" idea for church publications and has received recognition from Lions International in which he has been zone chairman.

Battery Chargers

DATA SHEETS and bulletin from Exide Industrial Div. describe Exide's constant-voltage, silicon rectifier (UR) chargers for stationary-type batteries. Data includes curves and statistics on charger performance at various electrical loads plus diagrams and instructions for installing associated alarms and ground detection systems. For your free copies write *Exide Industrial Div., Rising Sun & Adams Ave., Dept. TE&M, Philadelphia 20, Pa.*

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CABLE SPLICERS. Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1800 Johnson Street, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

HELP WANTED — Accountant and commercial supervisor by Class "A" telephone company, 6000 stations, two exchanges. Write giving details of education and experience. Write Box 97, c/o TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.

WIRE CHIEF, Equipment Engineering or Maintenance Position. Young man with 9 years telephone experience desires permanent responsible technical position with an Independent telephone company in Pennsylvania. Thoroughly trained in step by step dial switching and toll ticketing systems. Telephone engineering and supervisory experience. Write Box 98, c/o TE&M, 7720 Sheridan Rd., Chicago 26, Ill.

TELEPHONE ENGINEER — Must be an electrical engineering graduate with experience in plant, traffic and commercial departments. This is an unusual opportunity for an engineer with managerial and administrative ability to use and develop all of his possibilities. Location — Southern Connecticut — at the headquarters of a nation-wide utility company Reply sending a complete resume to Box 90, c/o TE&M, 7720 Sheridan, Chicago, Ill

POSITION WANTED

YOUNG MAN with college degree, commercial experience with Bell system and Independent telephone industry, desires position with an Independent telephone company. Write Box 99, c/o TE&M.

FOR SALE

MAGNETO TELEPHONES — Leich 901 wall or desk magneto telephones. Cleaned, tested and guaranteed, $16.50 each. As removed from service $15.00 each. Turtle Lake Tel. Co., Turtle Lake, Wisc.

STROMBERG-CARLSON 2-position nonmult. switchboard, 600 lines C.B., 50 mag., 7 years old, good condition with subcycle ringing machine and interrupter. C. D. storage battery, 4 units, 3 cells each, 24v, 2 years old with Raytheon rectichargers, almost new. Stromberg Carlson mag. hand sets. Make us an offer. Fred L. Mayer, Mt. Pulaski Telephone Company, Box 154, Mt. Pulaski, Illinois.

HIGHWAY CABLE TRAILER — Heavy duty, good condition — $750.00. Neale Model D Spinner with chest and extra spool — $100.00. Inquire at Morton Contracting Company, Box 11, Cherokee, Iowa.

FOR SALE

BUSINESS OPPORTUNITIES. The Board of Directors of the West Lawn Telephone Company, Leeton, Missouri, have been instructed by the stockholders, to advertise the company for sale. For further information write P. O. Box 68 or visit the business office. The Board reserves the right to reject any or all bids.

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A. E. MONOPHONES, #40 SERIES, — St. Line. Hi-Imp, Ringers. Less Dials. @ $10.00 EA. — WITH DIAL. $12.00 ea.

STROMBERG #1243 — DESK SET. ST. LINE. W/DIAL. $12.00 ea.

NORTH ELECTRIC #5H6 — Desk Set. St. Line. Less Dial. $10.00 ea.

STROMBERG #1443 — Desk Sets. W/Dials. St. Line. $15.00 ea.

LEICH MAGNETO DESK SET, #901-1600 Ohm. $21.45 ea.

STROMBERG, #1248 — Desk Set Magneto. 1600 Ohm. $19.50 ea.

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BELTS — CLIMBERS — Complete Linemen's equipment, W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.

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BOOTHS — Telephone — Outdoor — Indoor — Steel — Stainless Steel — Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 37, N. Y.

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BORING MACHINES, EARTH — Highway Trailer Co., Edgerton, Wisc.

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CORDS, Switchboard (with or without plugs), Instrument (straight and retractile) cords in eleven colors. — Commercial Cord Co., Inc., 26 Main St., Clifton Springs, N. Y.

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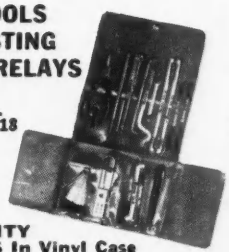

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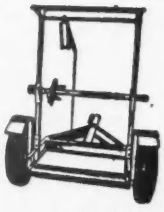

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269	41	2093-CEA and 2058-CDG
273		26-D
369		261-A

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Plastic Burial Cable 6 pr #16 ga. (stranded) with 1 #12 ga. quad. shielded PVC ins. & jacket wire armor. (sample on request)

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7 quad #19 ga. PILC (100,000 ft) 3-4 M ft. per reel, $200. per M ft.

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26 pr #19 ga. Neoprene 1400 ft (not coded), $250. per M ft.

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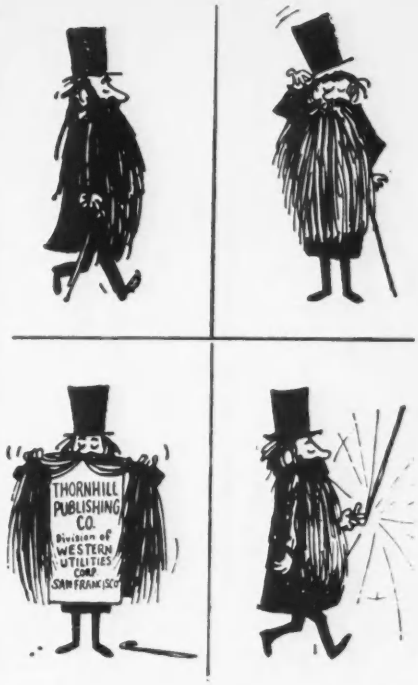

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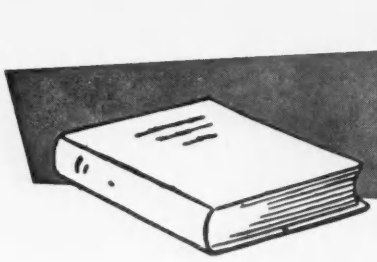


THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Cows Swallow Transistors

ACCORDING to Western Electric's *Observer* Bell Lab transistors have gotten into a lot of places — including outer space — since their introduction 11 years ago, and now they've gotten into cows' stomachs. Why? Animal physiologists at the University of Nebraska wanted to find out what goes on in a cow's digestive system. One of the methods they chose in their research program was to give cattle small FM transmitters to swallow. The transmitters, which contain Bell Lab transistors, are about an inch in diameter by six inches long. They're operated by ordinary flashlight batteries. Pasture fence is used as the receiving antenna. When any pressure changes occur, the transmitters in the cows' stomachs signal the fence, which is wired to a recording device. Could be that one day these transmitting cows will be making stanchion-to-stanchion calls.

Step-Saving Phones

ACCORDING to the Chicago *Tribune* two young electronic wizards have built a home telephone system which works lights and doors with magic. Daryl Strong, 22, and Robert Cleary, 23, hooked the system up in the home and work shop of Strong at 555 E. 10th St., Lockport, Ill. The project started in 1956 and now has 4,000 connections and nine telephones.

The idea, said Cleary, an engineering student at the Illinois Institute of Technology, evolved as he and Strong worked at their television servicing bench in a lawnmower shop in the rear of Strong's home. The shop is operated by Strong's brothers, Norbert, 30, and Kenneth, 35.

"Much energy was consumed in going back and forth to the house," said Strong. "A lot of time could be saved if we had a couple of telephones."

At that time the Automatic Electric Company, for whom Cleary worked, was moving to a new plant in Northlake and engineers discarded all useless parts. Cleary snapped them up. Strong, an International Business Machine customer engineer, also rifled through the refuse and grabbed needed parts. A wire was strung from the house to the shop, a circuit was closed and Cleary and Strong had their beginning.

Cleary and Strong started with a relatively simple telephone system but soon saw extra possibilities. Branching out, they connected their nine phones with certain lighting wires. By dialing "42" the light over the workbench is turned on, and "402" turns it off. Seven lights in the workshop, garage, and driveway can be operated from any of the seven phones in the house or from the two in the workshop.

The shop doors and one of the doors in the home can be locked or unlocked by dialing other numbers.

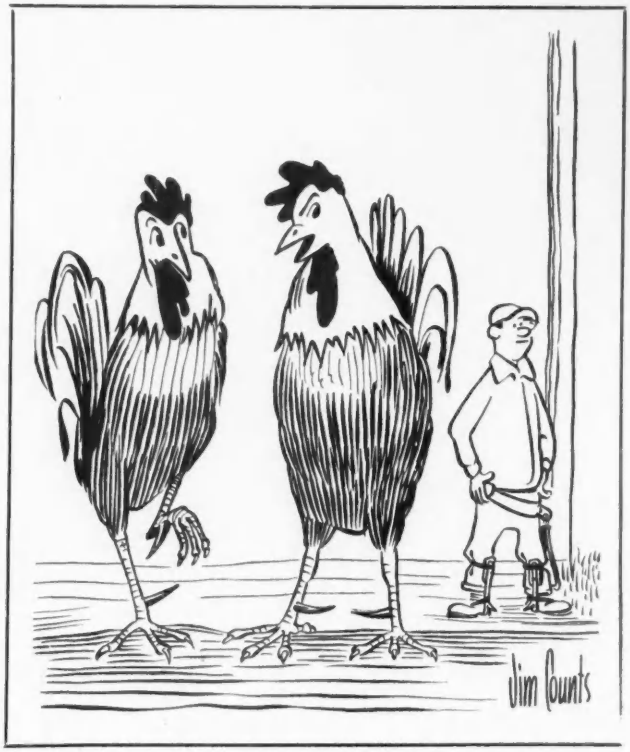
"If you plan to go out in the car you dial '54' to open the overhead door," Strong said. "Power for drawing the door is supplied by a vaccum cleaner motor."

"Not Too Happy"

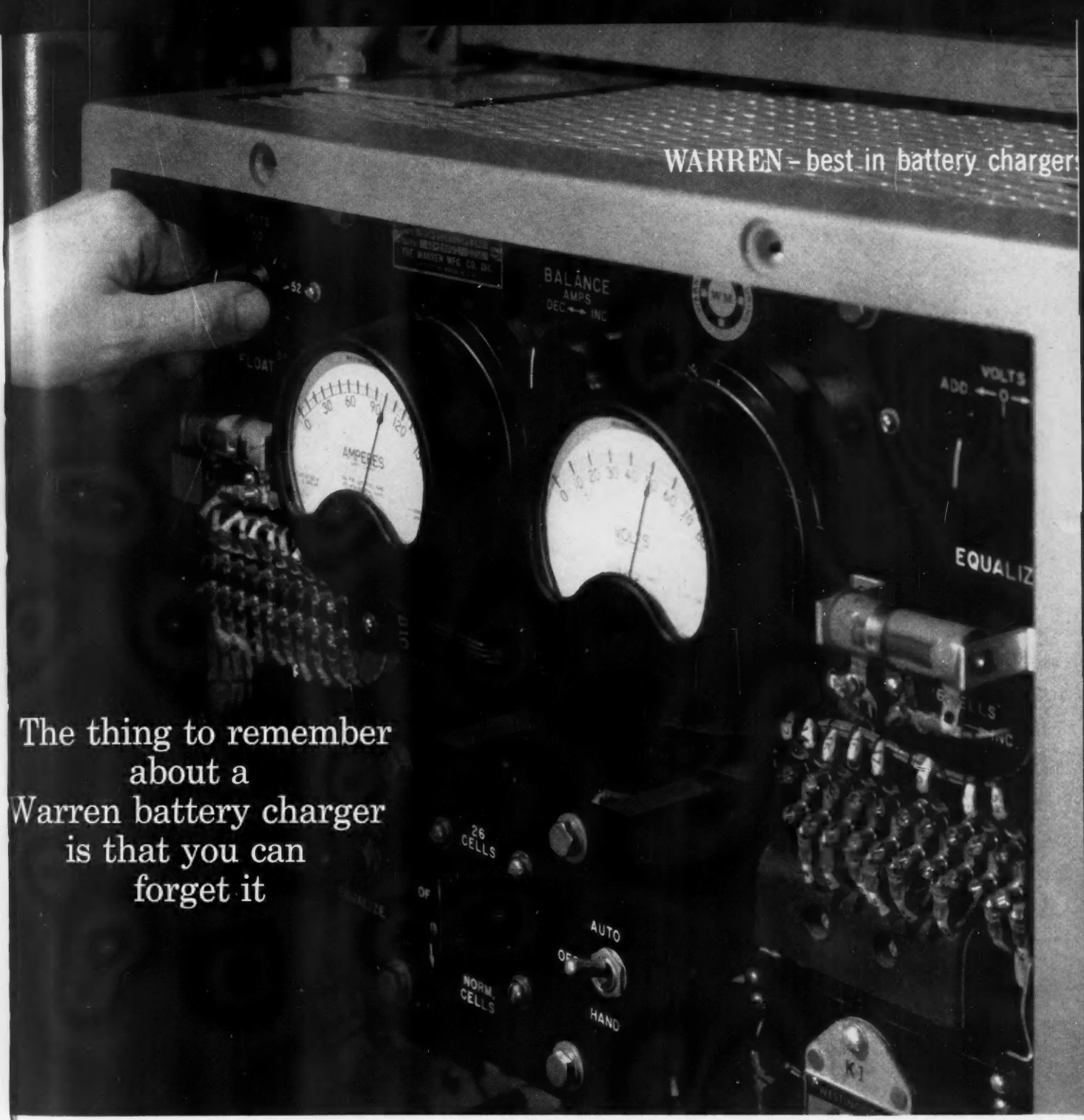
IN TOLLADEGA, Alabama, it seems that some youthful citizens aren't too pleased that plans have been announced to renovate the telephone booths in town by adding more glasswork and improving the lighting. "To much necking going on in the booths," was the reason reported in *Illinois Bell News* for the restoration.

"Party Line" Stethoscope

THE CHICAGO *Tribune* reports the development of a party line stethoscope that will permit as many as four doctors to listen to a patient's chest sounds at once. Presumably the idea came from the old rural telephone circuit, says the *Tribune,* in which everyone in town knew your business better than you.



"Copycat!!"



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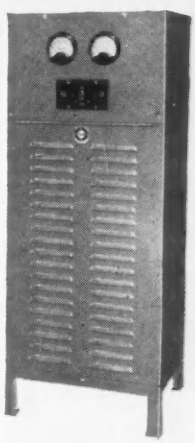

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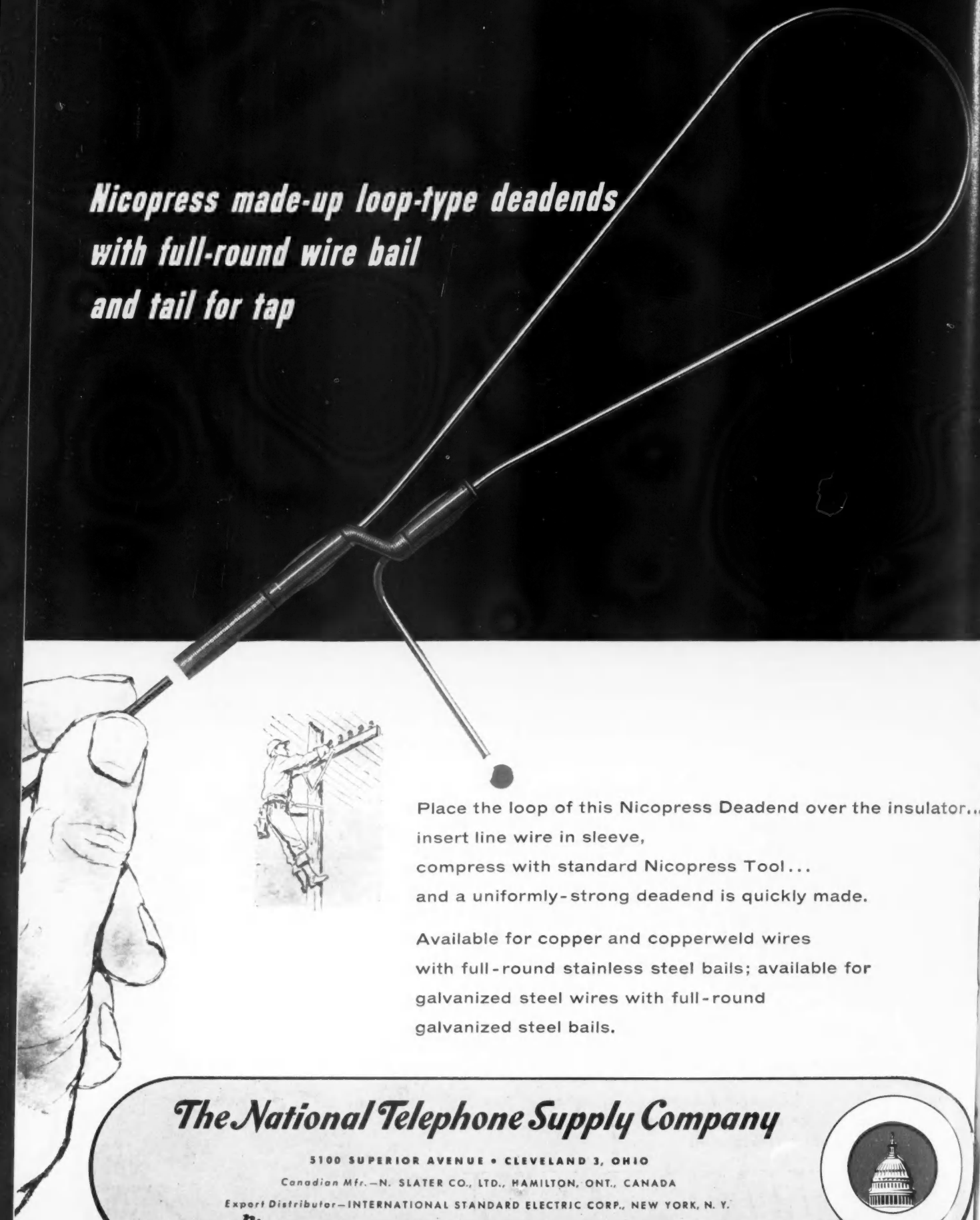

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